APC-3X97A Panel PC
User Manual

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Warning!

Safety & Warranty

1. Read these safety instructions carefully.
2. Keep this user's manual for later reference.
3. Disconnect this equipment from any outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. All cautions and warnings on the equipment should be noted.
10. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
11. Never pour any liquid into an opening. This could cause fire or electrical shock.
12. NEVER OPEN THE EQUIPMENT. FOR SAFETY REASONS, ONLY QUALIFIED SERVICE PERSONNEL SHOULD OPEN THE EQUIPMENT.
13. If any of the following situations arises, get the equipment checked by service personnel:

☐ The power cord or plug is damaged.

☐Liquid has penetrated into the equipment.

☐The equipment has been exposed to moisture.

☐The equipment does not work well, or you cannot get it to work according to the users manual.

☐The equipment has been dropped and damaged.

☐ The equipment has obvious signs of breakage.

14. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C OR ABOVE 70° C. IT MAY DAMAGE THE EQUIPMENT.

This equipment generates uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications.

It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Disclaimer

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Chapter 1

1.1 Features

- Fanless Design
- Intel Atom N270 1.6GHz Processor, FSB 533MHz
- One 200 Pin SO-DIMM socket, up to 2GB DDR2 533MHz SDRAM
- 11~32V DC wide range power input
- Total NEMA 4/IP65 compliant
- Sealed 5-Wire Resistive Touch Screen, Optional for GFG Resistive Touch Screen

1.2 Specifications

System

System	
Processor	Intel Atom Processor N270 1.6GHz built-in, FSB533MHz
System Memory	1 x 200-pin SO-DIMM socket, support 533MHz up to 2GB SDRAM
System Chipset	Intel 945GSE + Intel ICH7M
External I/O Port	Standard I/O: ● 2 x USB 2.0 connectors ● 1 x RJ-45 LAN connector ● 1 x DB-9 RS-232 (COM 1) connector ● 1 x DB-9 RS-232/422/485 connector (COM 2), Default RS-232 ● 1 x DC Power input Full Function I/O: ● 1 x VGA DB-15 port ● 1 x Audio Line-out port
Solid Storage Disk	1 x CF Slot (internal) 1 x 2.5” HDD bay for SATA HDD
OS Support	Windows XP Professional, XP Embedded
LCD	
Display Type	TFT-LCD
Max. Resolution	15” 1024x768 **(APC-3597A)** 17”/19” 1280x1024 **(APC-3797A/3997A)**
Max. Color	262K
Luminance (cd/m^2)	350 (cd/m^2) **(APC-3597A)** 300 (cd/m^2) **(APC-3797A/3997A)**
View Angle	H:120° / V:100° **(APC-3597A)** H:160° / V:170° **(APC-3797A)**

	H:160° / V:160° **(APC-3997A)**
Backlight Lifetime	50,000hrs
Touch Screen	
Type	Resistive Type
Light Transmission	80%
Power Supply	
Power Input	DC 11~32V
Mechanical	
Construction	Stainless Steel
IP Rating	Total IP65
Mounting	VESA 75x75 **(APC-3597A/3797A)** VESA 100x100 **(APC-3997A)**
Dimension	399 (W) x324(H) x 53 (D) mm **(APC-3597A)** 432 (W) x358(H) x 57 (D) mm **(APC-3797A)** 470 (W) x389(H) x 60 (D) mm **(APC-3997A)**
Environmental	
Operating Temperature	0~50 ° C
Storage Temperature	-20~60 ° C
Storage Humidity	10~90% @40℃ non-condensing
Certificate	Meet CE/FCC Class A

1.3 Brief Description of the APC-3X97A

The chassis of the APC-3X97A is made of stainless steel with an ultra slim profile. It is built in the Intel Atom N270 1.6GHz, FSB 533MHz, it is fanless. The model comes with a 15” ~19” inch TFT LCD display, total NEMA 4/IP65 compliant, space for one 2.5-inch HDD, resistive touch screen, a DC 11~32V wide range power input. This industrial panel PC also features 2 COM ports, 2 USB ports and 1 x Gigabit LAN port. It is ideal for use as a PC-based controller for Automotive, Logistic Process, Materials Handling, and Kiosk applications.

Figure 1.1: Front View of APC-3997A

Figure 1.2: Rear View of APC-3997A

1.4 Chassis Dimensions

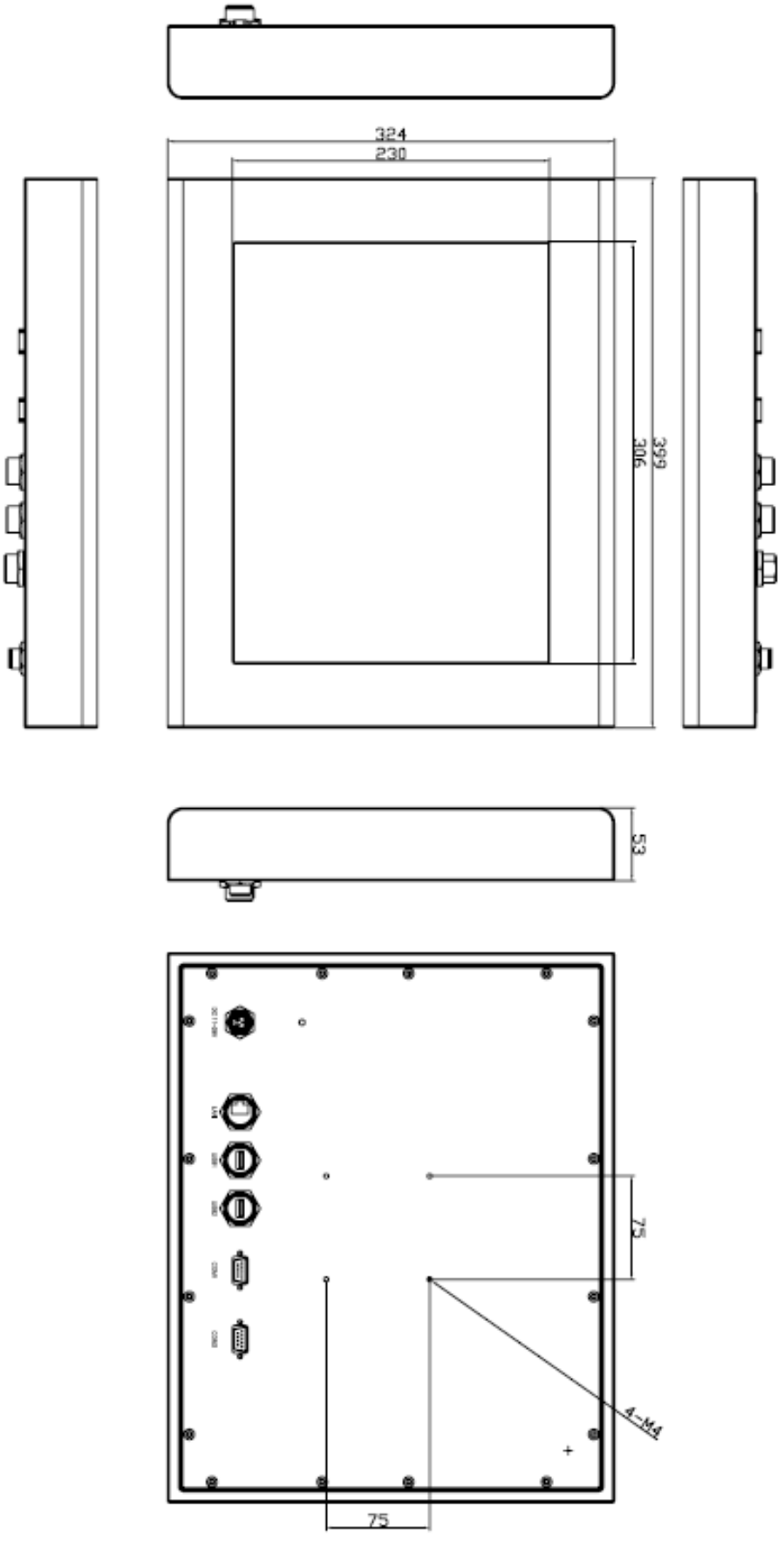


Figure 1.3: Dimensions of the APC-3597A

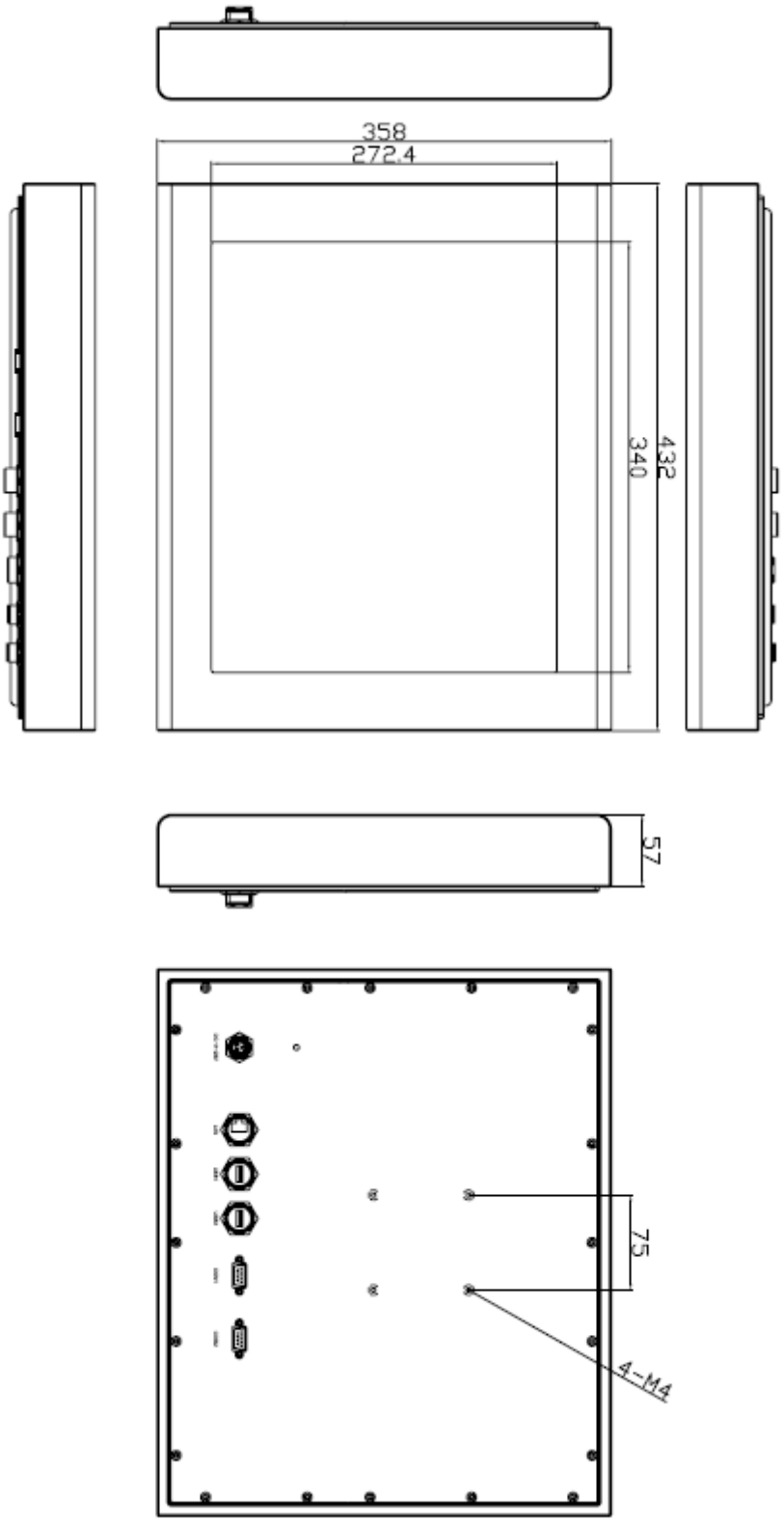


Figure 1.4 Dimensions of the APC-3797A

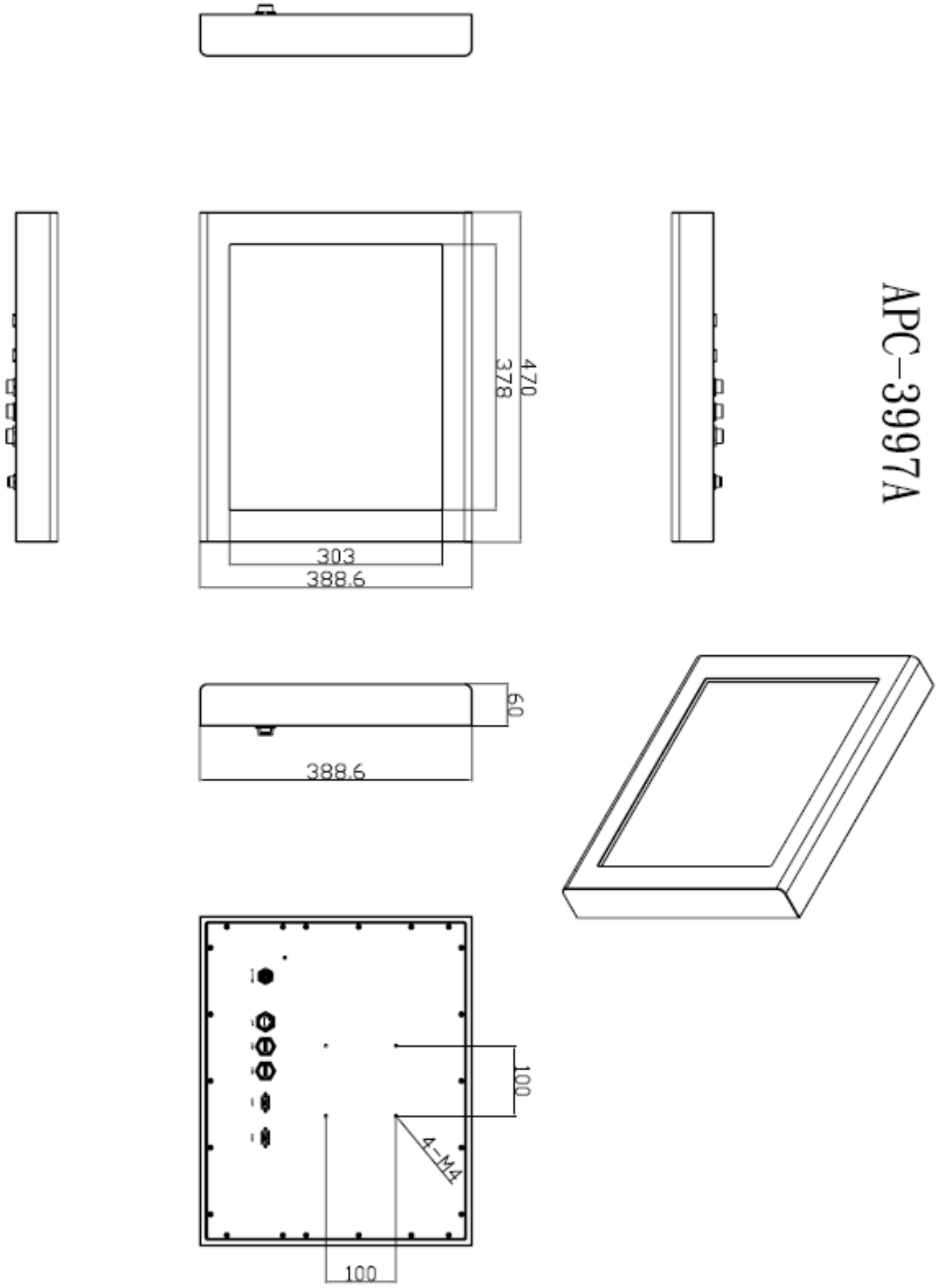


Figure 1.5 Dimensions of the APC-3997A

Chapter 2

2.1 Mainboard Specifications

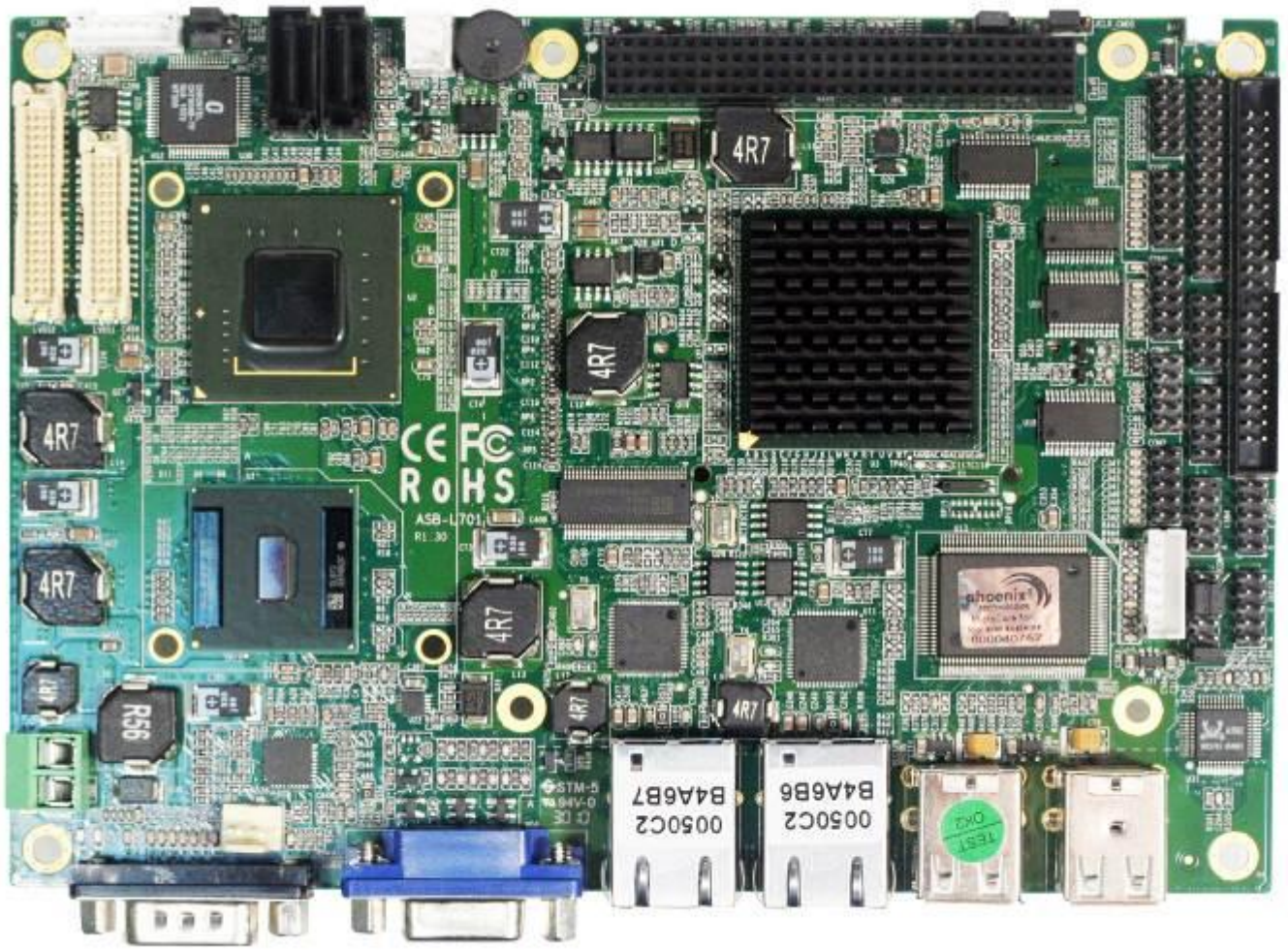


Figure 2.1: Mainboard Overview

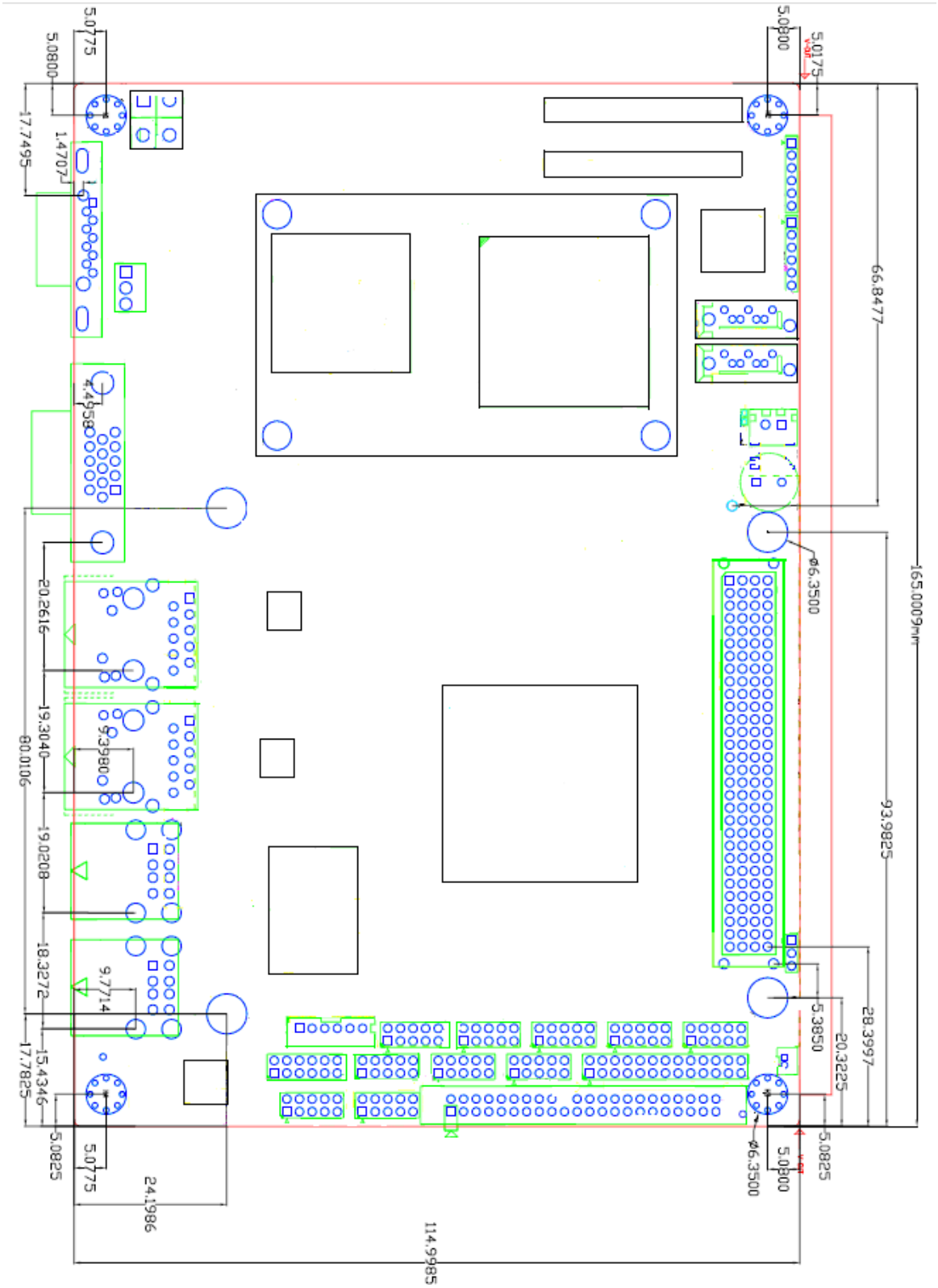
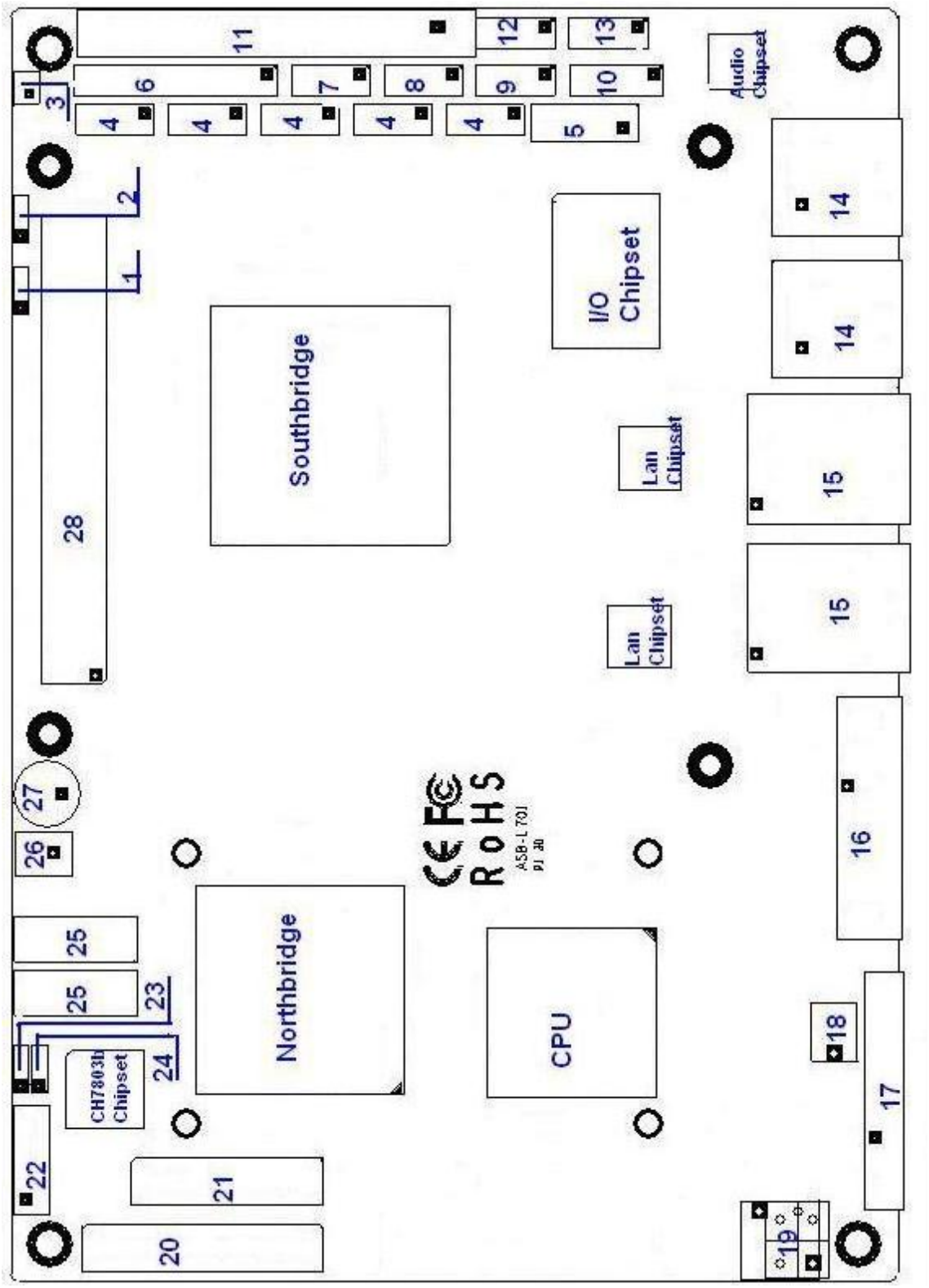


Figure 2.2: Mainboard Dimensions


Southbridge
Northbridge
CPU
I/O Chipset
Lan Chipset
Lan Chipset
Audio Chipset
CH7803b Chipset
ASB-L70J
RoHS
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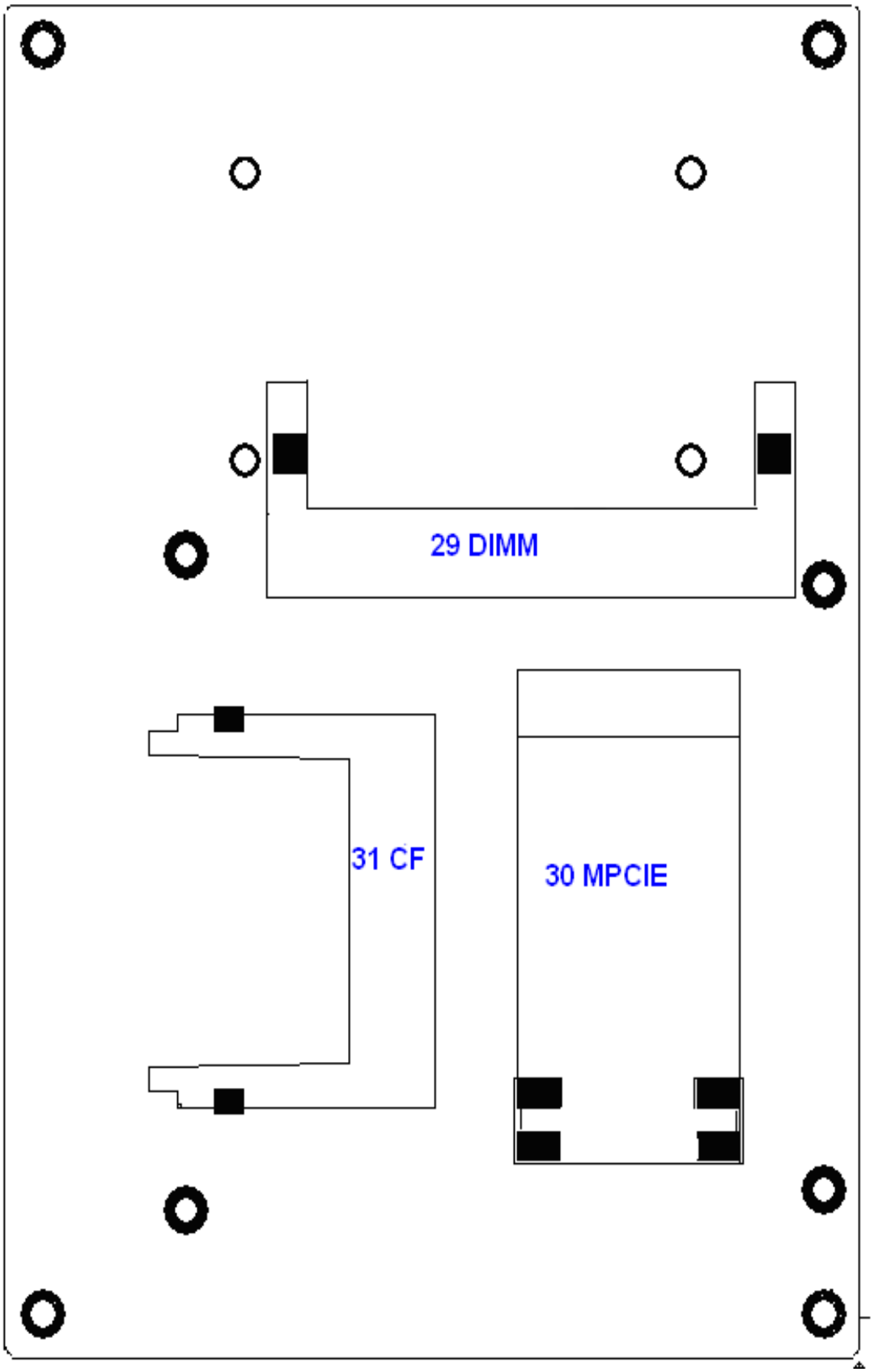


Figure 2.3: Connector and Jumper Locations

Specifications	
Board Size	165 x 115mm
CPU Support	Intel Atom N270 1.6 GHz with 533MHz FSB
Chipset	Intel 945GSE + Intel ICH7M
Memory Support	1x200pin 533/400MHz DDR2 SO-DIMM support, up to 2GB SDRAM
Graphics	Intel Graphics Media Accelerator 950VGA integrated in Intel 945GSE 18-bit dual-channel LVDS integrated in Intel 945GSE 18/24 bit dual-channel LVDS support by Chrontel CH7308B 1 x DB15 Female connector for external
Super I/O	Winbond W83627UHG
BIOS	Award BIOS
Storage	2 x SATA Connector 1 x Compact Flash II Slot 1 x 44-pin IDE Connector
Network	2 x Gigabit Ethernet Port by RJ45 with LED indicators - Ethernet controller : 2 x PCIe by one bus Realtek 8111D
USB	4 x USB 2.0 stack port for external 2 x USB 2.0 header for internal
Serial	1 x RS232 port, DB9 connector for external (COM1), pin 9 w/5V/12V/Ring select 1 x RS232/422/485 select header for internal (COM2), default RS232 4 x RS232 header for internal (COM3 – COM6)
Digital I/O	8-bit digital I/O by header 4-bit digital Input 4-bit digital Output
Battery	Support CR2477 battery by 2-pin header
Audio	Support Audio via Realtek ALC662 HD audio decoder Support Line-in, Line-out, MIC by 2x5-pin header
Printer	1x LPT port by 2x13-pin header
Keyboard /Mouse	1x PS2 keyboard/mouse by 1x6 -pin wafer connector
Expansion Bus	1x PC 104+ connector (PCI master 4, jumper for +3.3V &

	5V select) 1x PCIe (PCI-e 1x +SMBUS+USB2. 0) mini card
Power Management	DC12V input 1 x 2x2-pin power input connector
Front I/O	by 2x5-pin header Power on/off switch Reset switch Power LED status HDD LED status Buzzer
Watchdog Timer	Software programmable 1 – 255 second by Super I/O
External I/O port	1 x COM Port (COM1) 4 x USB 2.0 Ports (stack) 2 x RJ45 GbE Port (10/100/1000Mbps) 1 x VGA Port
Temperature	Operating: 0 – 60 degree C Storage: -20 – 80 degree C
Humidity	5% - 95%, non-condensing, operating
EMI/EMS	CE/FCC class A

2.2 Onboard Jumpers and Port Pinouts

1. JVCCIO (2.0MM 1X3) PCI-104 port voltage selection jumper: select voltage for PCI-104+ device

JVCCIO	PCI-104 VCCIO Voltage
CLOSE 1-2	**+3.3V (default)**
CLOSE 2-3	+5V

2. JCLR_CMOS (2.0MM 1X3) CMOS clear jumper: CMOS clear operation will permanently reset old BIOS settings to factory defaults.

JCLR_CMOS	CMOS
CLOSE 1-2	**NORMAL (default)**
CLOSE 2-3	CLEAR CMOS

Procedures of CMOS clear:

1. Turn off the system and unplug the power cord from the power outlet;
2. To clear the CMOS settings, use the jumper cap to close pins 2 and 3 for about 3 seconds then reinstall the jumper clip back to pins 1 and 2.
3. Power on the system again;
4. When entering the POST screen, press the <DEL> key to enter CMOS Setup Utility to load optimal defaults;
5. After the above operations, save changes and exit BIOS Setup.

3. BAT (1.25.0MM 1X2) Ext. Battery port: a 3.3V battery is embedded to provide power for CMOS.

PIN#	Signal Name
PIN1	VBAT
PIN2	Ground

4.COM2-COM6 (2.0MM 2X5) COM2~COM6 port: up to 5 standard RS232 ports are provided. They can be used directly via COM adapter cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

Note: COM2 port is controlled by pins No.8~10 of JCOM. For details, please refer to description of JCOM.

5.KB/MS (2.0MM 1X6) PS/2 keyboard/mouse port: the port can be connected to PS/2 keyboard or mouse via a dedicated adapter cable for direct use.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK
6	MSCLK

6. LPT (2.0MM 2X13) Parallel port: a standard 26 pin parallel port is provided to connect parallel peripherals as required.

Signal Name	Pin#	Pin#	Signal Name
PSTB#	1	2	PD0
PD1	3	4	DP2
DP3	5	6	DP4
DP5	7	8	DP6
DP7	9	10	ACK#
BUSY	11	12	PE
SLCT	13	14	AFD#
ERR#	15	16	INIT#
SLIN#	17	18	Ground
Ground	19	20	Ground
Ground	21	22	Ground
Ground	23	24	Ground
Ground	25	26	Ground

7. GPIO (2.0MM 2X5) General-purpose input/output port: it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
GPIO20	1	2	GPIO60
GPIO21	3	4	GPIO61
GPIO22	5	6	GPIO62
GPIO23	7	8	GPIO63
Ground	9	10	+5V

8. COM22 (2.0MM 2X5): it provides selectable RS422/485 serial signal output.

Signal Name	Pin#	Pin#	Signal Name
A	1	2	Terminal Resistance
B	3	4	Terminal Resistance
Z	5	6	NC
Y	7	8	NC
Ground	9	10	NC

9. USB4 (2.0MM 2X5) **Front USB connector**: it provides two USB ports via a dedicated USB adapter cable.

Signal Name	Pin#	Pin#	Signal Name
+5V	1	2	+5V
USB_P6_DN	3	4	USB_P7_DN
USB_P6_DP	5	6	USB_P7_DP
Ground	7	8	Ground
NC	9	10	Ground

Note:

Before connection, make sure that pinout of the USB adapter is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

10. JCOM (2.0MM 2X6) COM1/2 setup jumper: pin 1~6 are used to select signal out of pin 9 of COM1 port; pin 7~12 are used to select output type for COM2 port (RS232 or RS422/485).

JCOM	Function
CLOSE 1-2	**COM1 Pin9=RI (default)**
CLOSE 3-4	COM1 Pin9=+5V
CLOSE 5-6	COM1 Pin9=+12V
CLOSE 7-9 **CLOSE 8-10**	**COM2 FOR RS232 FROM COM2 (default)**
CLOSE 9-11 CLOSE 10-12	COM2 FOR RS485/RS422 FROM COM22

Note:

1. As determined by its hardware design, the board features full-duplex RS485 communication. Like RS422, a four-wire connection is necessary.
2. Since COM2 and COM22 use the same address, they cannot work at the same time.

11. IDE (2.0MM 2X22) IDE connector: the motherboard provides a 44-pin IDE connector for connection of 2.5' IDE hard disk drivers and supports up to 2 IDE devices.

Signal Name	Pin#	Pin#	Signal Name
RESET	1	2	Ground
IDE_PDD7	3	4	IDE_PDD8
IDE_PDD6	5	6	IDE_PDD9
IDE_PDD5	7	8	IDE_PDD10
IDE_PDD4	9	10	IDE_PDD11
IDE_PDD3	11	12	IDE_PDD12
IDE_PDD2	13	14	IDE_PDD13
IDE_PDD1	15	16	IDE_PDD14
IDE_PDD0	17	18	IDE_PDD15
Ground	19	20	NC
DREQ	21	22	Ground
IOW#	23	24	Ground
IOR#	25	26	Ground
IOCHRDY	27	28	Ground
DACK#	29	30	Ground
IRQ14	31	32	NC
Address 1	33	34	IDE_PDIAG
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
+5V	41	42	+5V
Ground	43	44	NC

Note:

If two IDE devices are connected, CF card connection cannot be realized.

12. F_PANEL (2.0MM 2X5) Front panel connector

Signal Name	Pin#	Pin#	Signal Name
HD LED+	1	2	POWER LED+
HD LED-	3	4	POWER LED-
Ground	5	6	PWRBTN
RESET	7	8	Ground
BUZZER+	9	10	BUZZER-

PIN1&3: They are used to connect hard disk activity LED. The LED blinks when the hard disk is reading or writing data.

PIN2&4: They are used to connect power LED. When the system is powered on or under S0/S1 state, the LED is normally on; when the system is under S4/S5 state, the LED is off.

PIN5&6: They are used to connect power switch button. The two pins are disconnected under normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state.
PIN7&8: They are used to connect reset button. The two pins are disconnected under normal condition. You may short them temporarily to realize system reset.
PIN9&10: They are used to connect an external buzzer.

Note:

When connecting LEDs and buzzer, pay special attention to the signal polarity.
Make sure that the connector pins have a one-to-one correspondence with chassis wiring, or it may cause boot up failure.

13. F_AUDIO (2.0MM 2X5) Front Audio: An onboard REALTEL ALC662 CODEC is used to provide high-quality audio I/O ports; Line Out can be connected to a headphone or amplifier; Line In is used for the connection of external audio source via a Line in cable; Mic is the port for microphone input audio.

Signal Name	Pin#	Pin#	Signal Name
FRONT-OUT-L	1	2	LINEIN_R
AUD_AGND	3	4	AUD_AGND
FRONT-OUT-R	5	6	LINEIN_L
AUD_AGND	7	8	AUD_AGND
FRONT-MIC1	9	10	AUD_AGND

Note:

The board only supports mono microphone input.

14. USB1/2 Rear USB connector: it provides up to 4 USB2.0 ports.

15. LAN1/2 Rear LAN connectors: 2 standard 1000M RJ-45 Ethernet ports are provided. LINK LED (green) and ACTIVE LED (yellow) respectively located at the left-hand and right-hand side of the Ethernet port indicate the activity and transmission state of LAN.

16. VGA (Video Graphic Array): GMA950 GPU is integrated to provide high-quality video output.

17. COM1 Rear serial port: standard DB9 serial port is provided to make a direct connection to serial devices.

18. FAN (2.54MM 1X3) Fan connector: cooling fans can be connected directly for use. You may set the rotation condition of cooling fan in PC Health Status menu of BIOS Setup.

Pin#	Signal Name
1	Ground

2	+12V
3	Rotation detection

Note: Output power of cooling fan must be limited under 5W.

19. AT12V (5.0MM 1X2) 12V System power input connector

Pin#	Signal Name
1	+12V
2	Ground

Note:

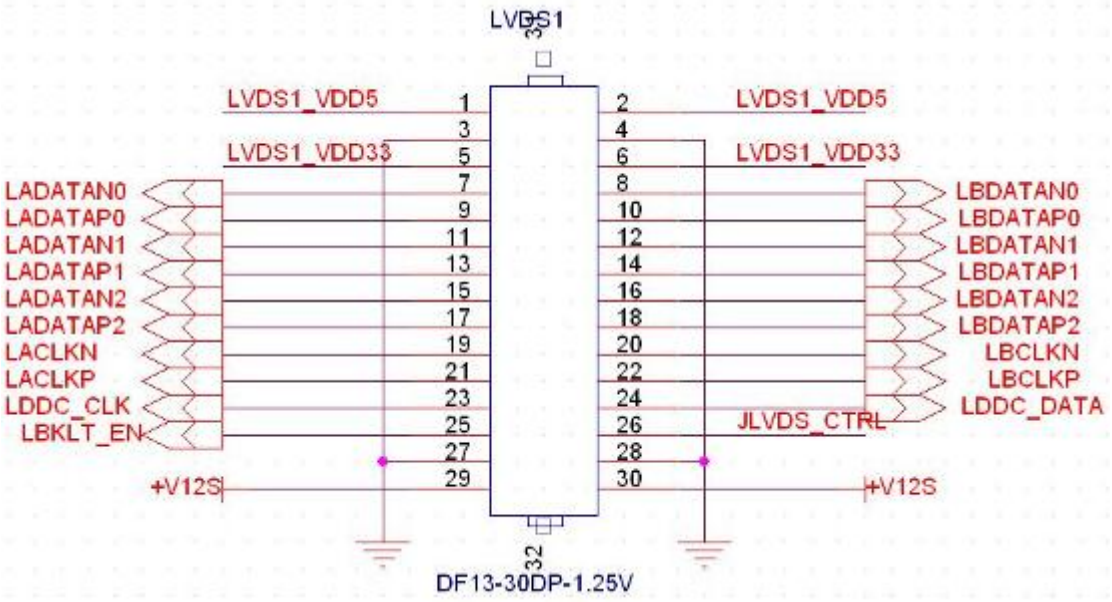
Make sure that the voltage of power supply is DC(12±5%)V before power on, or it may cause boot up failure and even system damage.

20. LVDS2 for dual 24 bit 24-bit LVDS output connector: Fully supported by CHRONTEL CH7038B chipset, the interface features single and dual channel 18-bit and 24-bit output with maximum resolution support up to 1600*1200. The format of connected display screen is OPENLDI. Model name of the interface connector is Hirose DF13-40DP-1.25V.

Signal Name	Pin#	Pin#	Signal Name
+5V	1	2	+5V
Ground	3	4	Ground
+3.3V	5	6	+3.3V
A0M	7	8	A4M
A0P	9	10	A4P
Ground	11	12	Ground
A1M	13	14	A5M
A1P	15	16	A5P
Ground	17	18	Ground
A2M	19	20	A6M
A2P	21	22	A6P
Ground	23	24	Ground
CLK1M	25	26	CLK2M
CLK1P	27	28	CLK2P
Ground	29	30	Ground
SC_DDC	31	32	SD_DDC
Ground	33	34	Ground
A3M	35	36	A7M
A3P	37	A3M	A7P
NC	39	40	NC

21. LVDS1 for dual 18 bit 18-bit LVDS output connector: Fully supported by INTEL945GSE chipset, the interface features single and dual channel 18-bit output with maximum resolution support up to 1600*1200. The format of connected display screen is SPWG. Model name of the interface connector is Hirose DF13-30DP-1.25V.

Signal Name	Pin#	Pin#	Signal Name
LVDS1_VDD5	1	2	LVDS1_VDD5
Ground	3	4	Ground
LVDS1_VDD33	5	6	LVDS1_VDD33
LADATAN0	7	8	LBDATAN0
LADATAP0	9	10	LBDATAP0
LADATAN1	11	12	LBDATAN1
LADATAP1	13	14	LBDATAP1
LADATAN2	15	16	LBDATAN2
LADATAP2	17	18	LBDATAP2
LACLKN	19	20	LBCLKN
LACLKP	21	22	LBCLKP
LDDC_CLK	23	24	LDDC_DATA
LBKLT_EN	25	26	JLVDS_CTRL
Ground	27	28	Ground
+V12S	29	30	+V12S



22. BKL (2.0MM 1X5) Backlight control connector for LVDS1/2

Pin#	Signal Name
1	+12V
2	+12V
3	Ground
4	Ground

5	ENABKL
6	CTRBKL

Note：

Pin# 6, Backlight control voltage from 0~ 5V

23. JBGT_CTRL (2.0MM 1X6) Backlight Control jumper setting for LVDS1/2

JBGT_CTRL	Function
Close 1-2	**LEVEL**
Close 2-3	PWM

Note: please check first your LVDS panel backlight control by LEVEL or PWM?

24. JBKLT_EN (2.0MM 1X3) Selection of LVDS1/2

JBKLT_EN	Function
Close 1-2	**LVDS1**
Close 2-3	LVDS2

25. SATA1/2 SATA Connectors: two SATA connectors are provided, with transfer speed up to 3.0Gb/s.

26. CN1 (2.5MM 1X2): an onboard 5V output connector is reserved to provide power for IDE/SATA devices.

Pin#	Signal Name
1	+5V
2	Ground

Note:

Output current of the connector must not be above 1A.

27. BZ Buzzer: onboard buzzer

28. PCI- 104+ PCI-104 connector: it conforms to standard PCI-104 (PCI only) specification.

29. SO-DIMM Memory socket: the socket is located at the backside of the board and supports 200PIN 1.8V DDRII400/533 SO-DIMM memory module up to 2G. If a DDRII667/800 memory module is installed, the system will reduce the DRAM frequency to 533MHz.

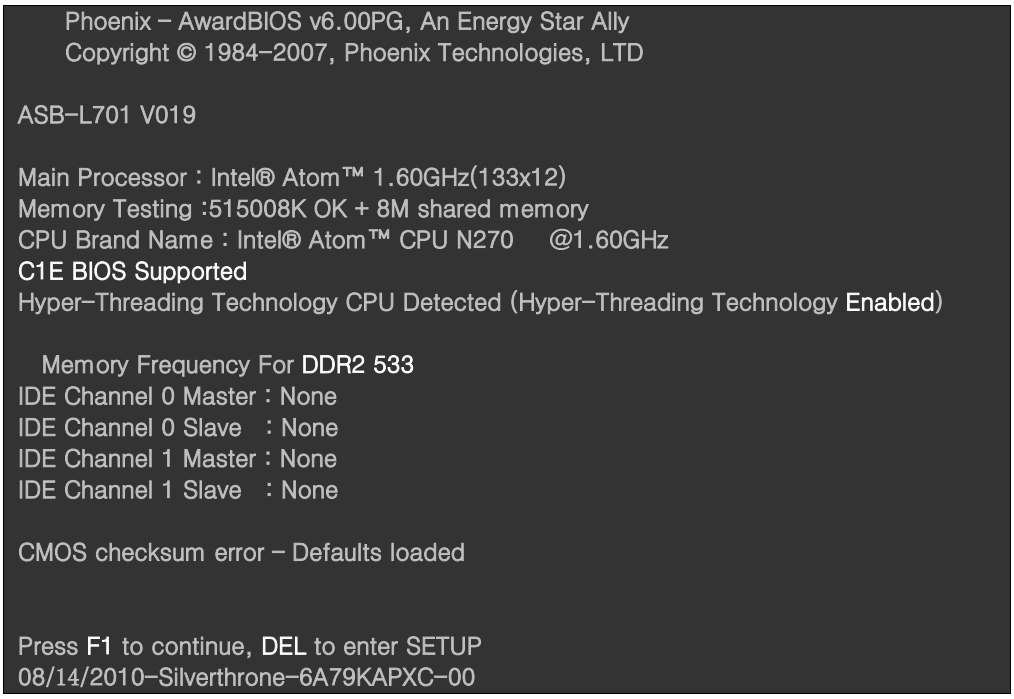
30. MPCIE Mini PCI-E slot: it supports MINI PCI-E devices with USB2.0, SMBUS and PCI-E signal.

31. CF CF Card Slot: it is located at the backside of the board and serves as an insert interface for Type I and Type II Compact Flash card. The operating voltage of CF card can be set as 3.3V or 5V. The default setting of the product is 3.3V.

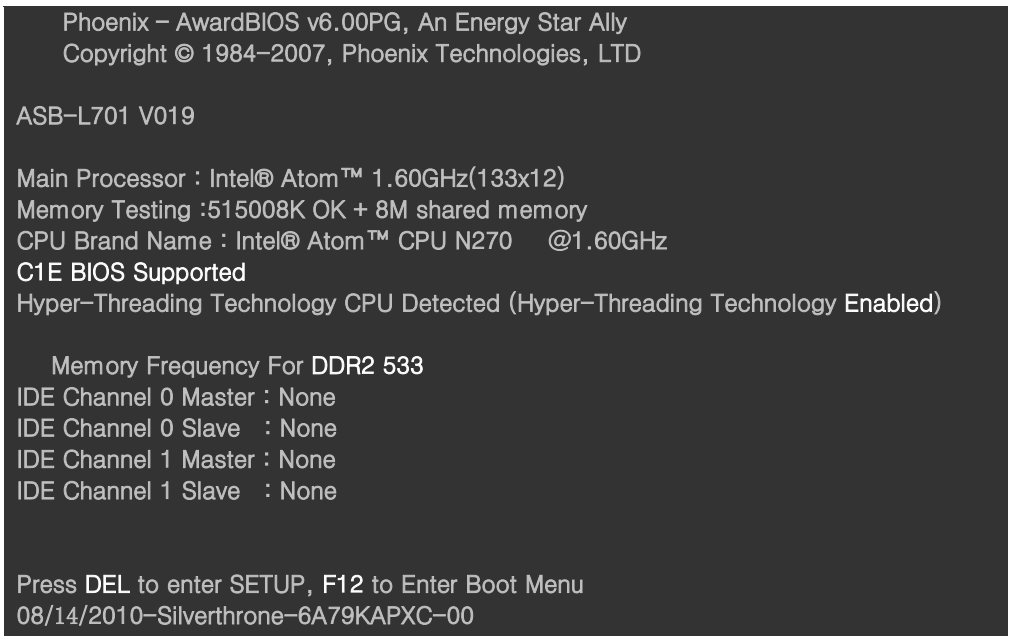
Chapter 3

3.1 Operations after POST Screen

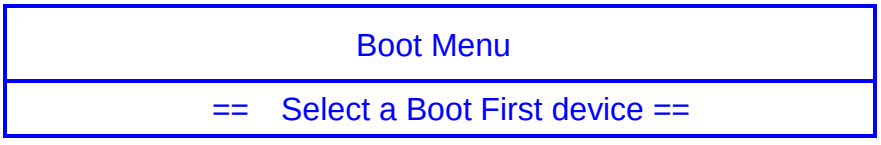
After CMOS discharge or BIOS flashing operation, the system will display the following screen for your further operation. Press **F1** key to continue or **Del** key to enter CMOS Setup.

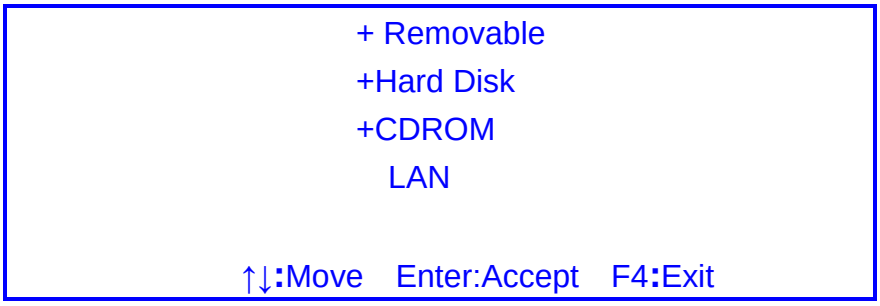

Phoenix – AwardBIOS v6.00PG, An Energy Star Ally
Copyright © 1984–2007, Phoenix Technologies, LTD
ASB-L701 V019
Main Processor : Intel® Atom™ 1.60GHz(133x12)
Memory Testing :515008K OK + 8M shared memory
CPU Brand Name : Intel® Atom™ CPU N270 @1.60GHz
C1E BIOS Supported
Hyper-Threading Technology CPU Detected (Hyper-Threading Technology Enabled)
Memory Frequency For DDR2 533
IDE Channel 0 Master : None
IDE Channel 0 Slave : None
IDE Channel 1 Master : None
IDE Channel 1 Slave : None
CMOS checksum error – Defaults loaded
Press F1 to continue, DEL to enter SETUP
08/14/2010-Silverthrone-6A79KAPXC-00

After optimizing and exiting CMOS Setup, the POST screen displayed for the first time is as follows and includes basic information on BIOS, CPU, memory, and storage devices.


Phoenix – AwardBIOS v6.00PG, An Energy Star Ally
Copyright © 1984–2007, Phoenix Technologies, LTD
ASB-L701 V019
Main Processor : Intel® Atom™ 1.60GHz(133x12)
Memory Testing :515008K OK + 8M shared memory
CPU Brand Name : Intel® Atom™ CPU N270 @1.60GHz
C1E BIOS Supported
Hyper-Threading Technology CPU Detected (Hyper-Threading Technology Enabled)
Memory Frequency For DDR2 533
IDE Channel 0 Master : None
IDE Channel 0 Slave : None
IDE Channel 1 Master : None
IDE Channel 1 Slave : None
Press DEL to enter SETUP, F12 to Enter Boot Menu
08/14/2010-Silverthrone-6A79KAPXC-00

Press **F12** key to enter Boot Menu during POST, as shown by the following figure.





3.2 Standard CMOS Features

Press [Del] key to enter BIOS Setup utility during POST, and then a main menu containing system summary information will appear.

Phoenix – Award BIOS CMOS Setup Utility

►Standard CMOS Features	Load Fail-Safe Defaults
►Advanced BIOS Features	Load Optimized Defaults
►Advanced Chipset Features	Set Administrator Password
►Integrated Peripherals	Set User Password
►Power Management Setup	Save & Exit Setup
►PnP/PCI Configurations	Exit Without Saving
►PC Health Status	
Esc : Quit	↑↓→← : Select Item
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type…	

Standard CMOS Features

Use this menu to modify basic system configurations such as time, date and etc.

Advanced BIOS Features

Use this menu configure advanced features of Award® BIOS.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PnP/PCI Configurations

This menu is valid only if your system supports PnP/PCI.

PC Health Status

This menu shows the current status of your PC.

Load Fail-Safe Defaults

Use this menu to load Fail-Safe defaults into BIOS for the most stable, and minimal-performance system operations.

Load Optimized Defaults

Use this menu to load factory settings into BIOS for optimal-performance system operations.

Set Administrator Password

Use this menu to set Administrator password.

Set User Password

Use this menu to set user password.

Save & Exit Setup

Save all changes to the CMOS and exit BIOS Setup.

Exit Without Saving

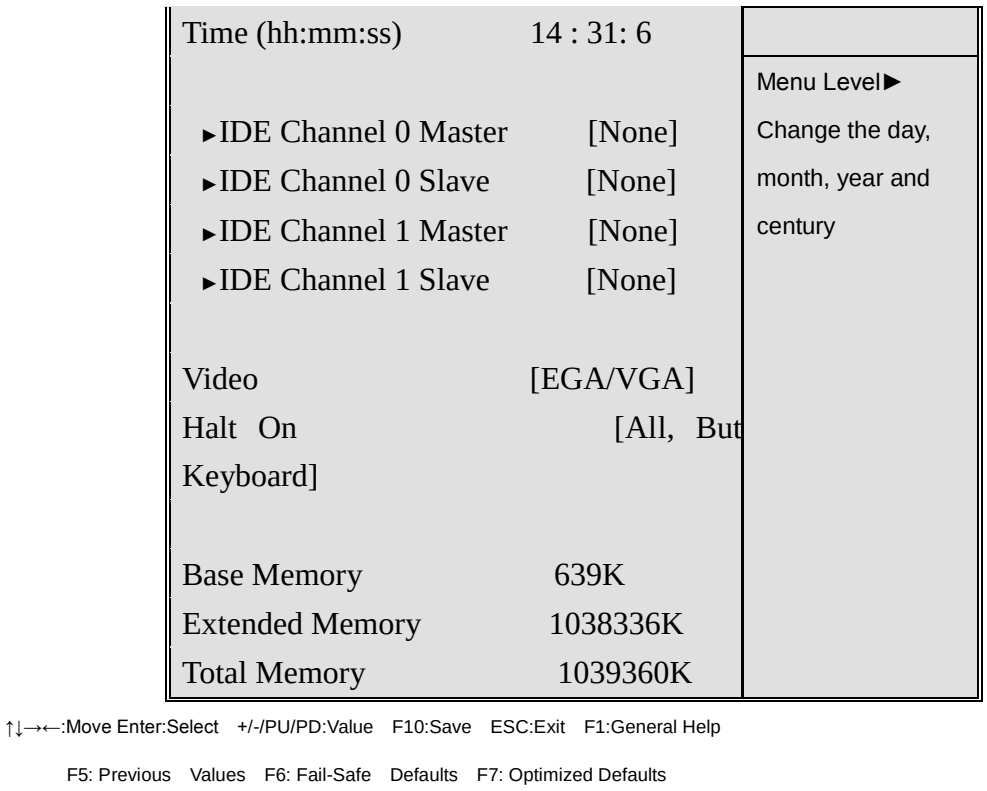
Abandon all changes to the CMOS and exit BIOS Setup.

The following figure shows the items of Standard CMOS Features menu, which may exclude any modifiable subitem or contain one or more modifiable subitems. Use arrow keys to select the items to be modified and <PgUp> or <PgDn> key to select desired settings.

Phoenix – AwardBIOS CMOS Setup Utility

Standard CMOS Features

Date (mm:dd:yy) Mon, Mar. 3 2009	Item Help


Time (hh:mm:ss) 14 : 31: 6
Menu Level►
Change the day, month, year and century
►IDE Channel 0 Master [None]
►IDE Channel 0 Slave [None]
►IDE Channel 1 Master [None]
►IDE Channel 1 Slave [None]
Video [EGA/VGA]
Halt On [All, But Keyboard]
Base Memory 639K
Extended Memory 1038336K
Total Memory 1039360K
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Date

This item allows you to set a desired system date (usually current date). The date format is <day><month><date><year>.

Day It is a read-only and bios-defined weekday attribute ranging from Sun (Sunday) to Sat (Saturday).

Month It is a month attribute ranging from Jan (January) to Dec (December).

Date It is a date attribute ranging from 1 to 31 and can be modified via numeric keys.

Year It is a user-defined year attribute.

Time

This item allows you to set a desired system time (usually current time). The time format is <hour><minute><second>.

Channel 0 Master / Channel 0 Slave

Channel 1 Master / Channel 1 Slave

Press PgUp/<+> or PgDn/<-> key to select among Manual, None and Auto type. Note that the specification of your drive device must be in compliance with the contents of Drive Table. If the information registered in this item is not correct, your hard disk will not work properly; if your hard disk specification is not found or does not conform to or the Driver Table, you may select Manual type to set the specification manually.

If you choose Manual, you will be requested to enter relevant information in the following entries. Keyboard input is also supported. For details, you may refer to the instructive materials provided by distributor or device manufacturer.

If a SCSI HDD device is used, set this item to "NONE".

If a CD-ROM drive is connected to the HDD port, set this item to "NONE"

AccessMode	Options are: Auto, Normal, Large and LBA
Cylinder	Number of cylinders
Head	Number of heads
Precomp	Write precompensation cylinder
Landing Zone	Head landing zone

Halt on

The item allows you to determine when the system will stop. Options are: No Errors; All Errors; All, But Keyboard.

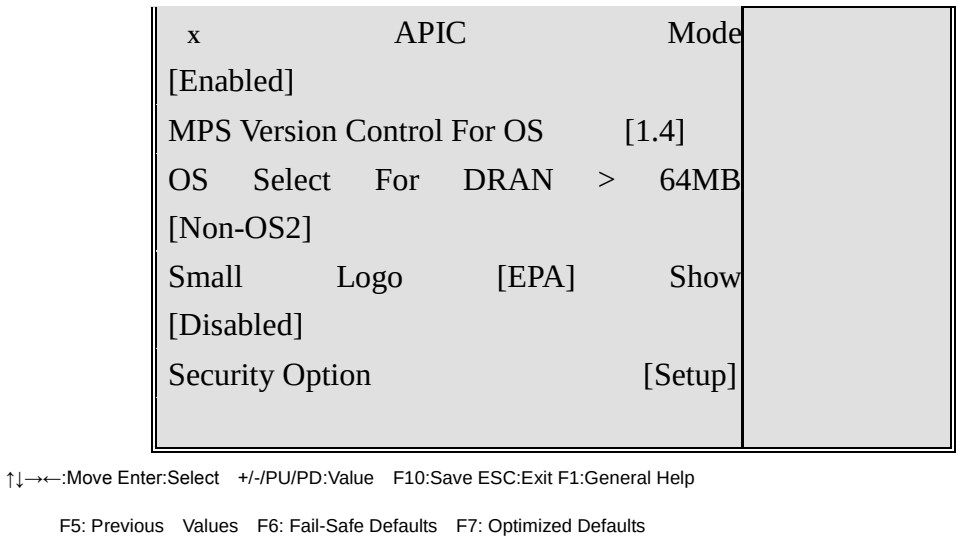
No Errors	The system boot will not stop for any error.
All Errors	Whenever the BIOS detects a non-fatal error, the system boot will stop.
All, But Keyboard	The system boot will not stop for a keyboard error but stop for all other errors as detected by BIOS. (default)

3.3 Advanced BIOS Features

Phoenix – AwardBIOS CMOS Setup Utility

Advanced BIOS Features

►CPU Feature [Press Enter]	Item Help
►Hard Disk Boot Priority [Press Enter]	
Virus Warning [Disabled]	
CPU L1 & L2 Cache [Enabled]	Menu Level►
Hyper-Threading Technology [Enabled]	
Quick Power On Self Test [Enabled]	
First Boot Device [Removable]	
Second Boot Device [Hard Disk]	
Third Boot Device [CDROM]	
Boot Other Device [Enabled]	
PXE Boot For Onboard LAN1 [Disable]	
PXE Boot For Onboard LAN2 [Disable]	
Boot Up NumLock Status [On]	
Gate A20 Option [Fast]	


x APIC Mode [Enabled]
MPS Version Control For OS [1.4]
OS Select For DRAN > 64MB [Non-OS2]
Small Logo [EPA] Show [Disabled]
Security Option [Setup]
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

CPU Feature

The item has the following options:

Delay Prior To Thermal [16 Min] (This item allows you to set the duration of entering CPU thermal throttling.)

C1E Function [Auto] CPU Power-saving State Enable Control

CPU C State Capability [C1] CPU Power-saving State Control

Execute Disable Bit [Enable] (Virus Protection Technology)

Hard Disk Boot Priority (IDE Storage Device Boot Priority)

This item is used to specify boot priority of IDE devices. Press "Enter" key for detailed setting.

Virus Warning

This item has two options: "Disabled" and "Enabled".

CPU L1 & L2 Cache

This item can be used to enable or disable the CPU's primary (L1) or secondary (L2) cache. If set to Enabled, operating speed of PC will be increased remarkably; if set to Disabled, the function will be inactivated.

Hyper-Threading Technology

Enable and disable Intel's hyper-threading technology.

Quick Power On Self Test

This item is used to accelerate Power On Self Test (POST) process. If set to Enabled, BIOS will shorten or skip some of its tests.

Enabled (default) Quick POST

Disabled Normal POST

First/Second/Third/Boot Other Device

BIOS will load the operating system according to the boot order of available devices. If disabled, the function will be inactivated.

PXE Boot For Onboard LAN1/LAN2(boot from PXE)

Disabled(default) System will run appointed boot device first after POST, If system can not find out any available boot devices it will run LAN boot

Enabled System will run LAN boot after POST at all times regardless of the appointed boot order, but it will run the appointed boot order after LAN boot failure.

Boot Up NumLock Status (Default: On)

On (default) Keypad numeric keys remain valid

Off Keypad arrow keys remain valid

Gate A20 Option

Normal Gate A20 signal is controlled by keyboard controller or chipset hardware.

Fast (default) Gate A20 signal is controlled by port 92 or specific programs of chipset.

APIC Mode

It refers to an advanced interrupt controller mode to meet the requirements of multi-core CPU.

MPS Version Control For OS

This item is used to specify the multiprocessor specification version of the system. It is recommended to keep the default value (1.4).

OS Selection for DRAM > 64MB

You must only select OS/2 when installing an OS/2 operating system with a RAM greater than 64MB. The options are: Non-OS/2 (default) and OS/2.

Small Logo [EPA] Show

This item is used to determine whether the Energy Star Logo will be displayed during POST. The options are: "Disabled" and "Enabled".

Security Option

Such option allows users to set access restrictions to both system and **Setup** utility, or just **Setup** utility.

System If one fails to enter a valid password in the popup box, the system will not boot up and the Setup utility will not be accessible.

Setup (default) If one fails to enter a valid password in the popup box, the system will boot up as usual, but the Setup utility will not be accessible.

3.4 Advanced Chipset Features Setup

Advanced Chipset Features Setup is used to change the values of chipset registers that control most options of computer.

Select ADVANCED CHIPSET FEATURES in the main menu, and the following screen will be displayed.

Phoenix – AwardBIOS CMOS Setup Utility

Advanced Chipset Features

DRAM Timing Selectable [By SPD] x CAS Latency Time Auto x DRAM RAS# to CAS# Delay Auto x DRAM RAS# Precharge Auto x Precharge Delay (tRAS) Auto x System Memory Frequency Auto SLP_S4# Assertion Width [1 to 2 Sec.] System BIOS Cacheable [Enabled] Video BIOS Cacheable [Disabled] Memory Hole At 15M-16M [Disabled] ►PCI Express Root Port Func [Press Enter] ** Onboard VGA Setting ** On-Chip Frame Buffer Size [8MB] DVMT Mode [DVMT] DVMT/Fixed Memory Size [128MB] Boot Display [VBIOS Default] LCD Panel Type [LVDS1 18 1024 X 768] LCD Panel Brightness [Level 8]	Item Help Menu Level►

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help

F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Note: If you are not familiar with chipset, never modify these settings at will.

DRAM Timing Selectable

Two options are available.

Manual (Manual setup)

By SPD (DRAM timing is set automatically according to memory SPD data)

When selecting Manual, the following five items are configurable; when selecting By SPD, the

following five items are not configurable.

CAS Latency Time

Once a SDRAM is installed, the clock latency will be determined by DRAM clock settings. The options are: 5, 4, 3 and Auto.

DRAM RAS-to-CAS Delay

You may set the delay period between CAS and RAS signal for DRAM read & write or refreshing. Shorter delay means quicker response, while longer delay means more stable performance. Options are: 2, 3, 4, 5, 6 and Auto.

DRAM RAS Precharge

If number of cycles is not sufficient enough to ensure that RAS saves its instructions before DRAM refreshing, it may cause incomplete refreshing and the DRAM will fail to maintain its data. Faster precharge means quicker response, while slower precharge means more stable performance. This item is only valid when a SDRAM is installed.

Options are: 2, 3, 4, 5, 6 and Auto.

Precharge Delay (t RAS)

Options are: Auto and 4~15.

System Memory Frequency

Options are: Auto, 533 and 667(MHz).

SLP_S4# Assertion Width

Four options are available: 4 to 5 Sec.
3 to 4 Sec.
2 to 3 Sec.
1 to 2 Sec.

System BIOS Cacheable

If set to Enabled, the feature will enable the caching of BIOS ROM at F0000h-FFFFFh for better system performance. However, if any program writes into this memory area, it will result in a system error. Options are: Enabled and Disabled.

Video BIOS Cacheable

If set to Enabled, the feature will enable the caching of video BIOS ROM for better system performance. However, if any program writes into this memory area, it will result in a system error. Options are: Enabled and Disabled.

Memory Hole At 15M-16M

This feature will decrease your memory by 1M and allow the few old ISA cards that require this memory to work properly on your system. Options are: Enabled and Disabled.

PCI Express Root Port Func

This item is used to configure PCI-E slot. For motherboards not equipped with PCI-E slot, such configuration is not required. If set to Disabled, the slot and slot device will be disabled. For example, onboard network adapter card can be disabled or enabled via PCI-E slot 1.

On-Chip Frame Buffer Size

This feature controls the amount of video memory allocated to integrated graphic card. The system memory can be used as video memory.

DVMT Mode

Three options are available: "FIXED", "DVMT" and "Both (FIXED+DVMT)".

When set to "FIXED" mode, a fixed portion of the system memory will be allocated to GPU. Two allocation sizes are available: 64MB and 128MB.

When set to "DVMT" Mode, the system will dynamically allocate system memory to GPU. In this mode, up to 224MB of system memory can be allocated.

When set to "Both(FIXED+DVMT)" mode, the system will allocate a fixed memory of 64MB as dedicated graphic memory, as well as allow a memory of 64MB to be dynamically allocated between GPU and operating system.

DVMT/FIXED Memory Size

Refer to the previous item.

Boot Display

This feature is to select desired display device. VBIOS, LVDS1, VGA + LVDS1, LVDS2 and VGA + LVDS2 can be selected as display device.

LCD Panel Type (LVDS Panel Type)

This feature is to select between LVDS1 and LVDS2. When selecting LVDS panel, users should be informed of LVDS panel types supported by the motherboard. The following options are available:

LVDS1 18	800X600
LVDS1 18	1024X768
LVDS1 18*2	1280X1024
LVDS1 18*2	1440X900
LVDS1 18*2	1400X1050
LVDS1 18*2	1600X1200
LVDS1 18	1280X800
LVDS1 18	1280X768
LVDS2 24	1024X768

LVDS2 24*2 1280X1024
LVDS2 24*2 1440X900
LVDS2 24*2 1920X1080

Note: Due to limited address length of BIOS, only a portion of panel parameters are listed in BIOS Setup. If the connected panel is not included in the parameter list, display problem will occur. In this case, we need to adjust BIOS setup.

LCD Panel Brightness

This feature provides adjustable brightness control: LEVEL0~15.

3.5 Integrated Peripherals

Phoenix – AwardBIOS CMOS Setup Utility

Integrated Peripherals

► OnChip IDE Device [Press Enter]	Item Help
► Onboard Device [Press Enter]	
► Super IO Device [Press Enter]	Menu Level►

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help

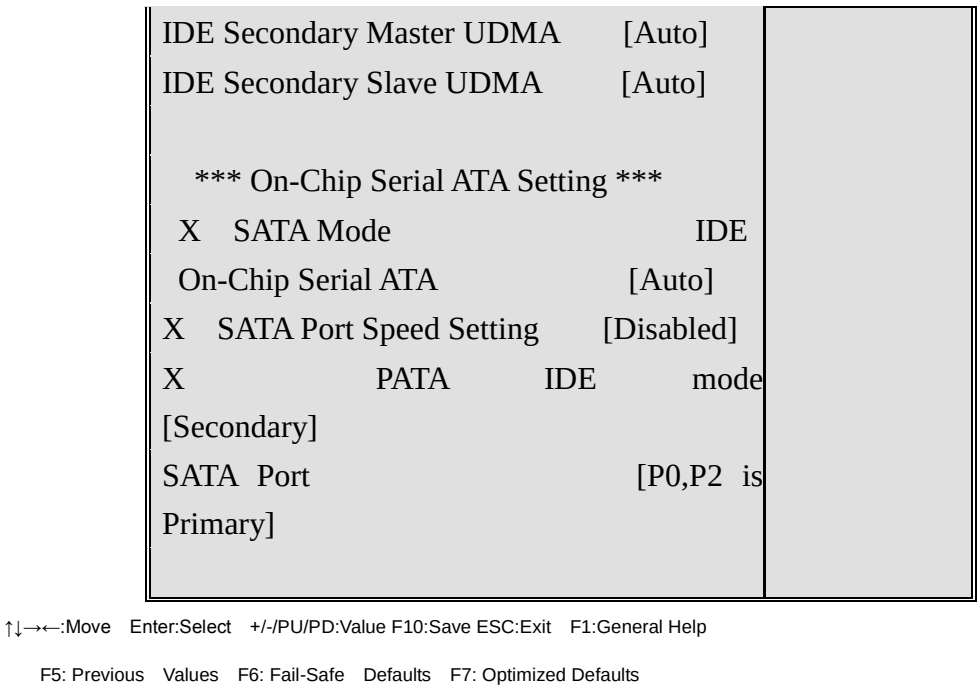
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Select "OnChip IDE Device" item and press "Enter" for setup of IDE devices, as shown by the following figure:

Phoenix – AwardBIOS CMOS Setup Utility

OnChip IDE Device

IDE HDD Block Mode	[Enabled]	Item Help
IDE DMA Transfer access	[Enabled]	
On-Chip Primary PCI IDE	[Enabled]	Menu Level►
IDE Primary Master PIO	[Auto]	
IDE Primary Slave PIO	[Auto]	
IDE Primary Master UDMA	[Auto]	
IDE Primary Slave UDMA	[Auto]	
On-Chip Secondary PCI IDE	[Enabled]	
IDE Secondary Master PIO	[Auto]	
IDE Secondary Slave PIO	[Auto]	


IDE Secondary Master UDMA [Auto]
IDE Secondary Slave UDMA [Auto]
*** On-Chip Serial ATA Setting ***
X SATA Mode IDE
On-Chip Serial ATA [Auto]
X SATA Port Speed Setting [Disabled]
X PATA IDE mode [Secondary]
SATA Port [P0,P2 is Primary]
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

IDE HDD Block Mode

If your IDE hard disk supports Block mode (most current hard disk products support the feature), select Enabled and BIOS will automatically detect optimum block mode supported by the hard disk. This will improve the transfer performance of hard disk. Options are: **Enabled** and Disabled.

IDE DMA Transfer Access

Options are: **Enabled** and Disabled.

On-Chip Primary/Secondary PCI IDE

Each IDE port of integrated peripheral controller supports up to 2 IDE channels. Select Enabled to activate each channel. Options are: **Enabled** and Disabled.

IDE Primary /Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields allow you to set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Mode 0 through 4 provides successively increased performance. In Auto mode, the system automatically determines the best mode for each device. Options are: **Auto**, Mode 0, Mode 1, Mode 3 and Mode 4.

IDE Primary /Secondary Master/Slave UDMA

Ultra DMA implementation is possible only if your IDE hard disk supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus mastering driver). If your hard disk and system software both support Ultra DMA/33, Ultra DMA/66 and Ultra DMA/100, select Auto to enable BIOS support. Options are: **Auto** and Disabled.

On-Chip Serial ATA

The following five options are available:

Disabled (Disable SATA controller)

Auto (Allocate SATA/IDE devices automatically)

Combined Mode (IDE+SATA Combo Mode)

Enhanced Mode

SATA Only

SATA PORT Speed Setting

Three options are available:

Disabled (Disable the feature)

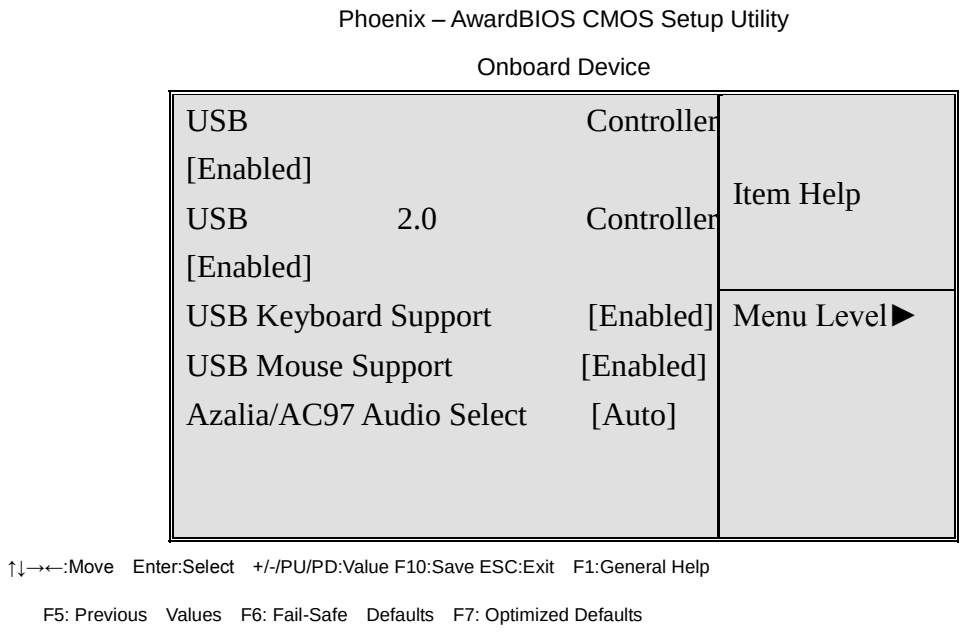
Force GEN I (Enhance transfer speed to 1.5Gb/s, i.e., 150MB/s)

Force GEN II (Enhance transfer speed to 3.0Gb/s, i.e., 300MB/s)

PATA IDE Mode

The item allows you to configure PATA IDE mode. Setup option: "Secondary",

Select "Onboard Device" item and press "Enter" for setup of onboard devices, as shown by the following figure:


Phoenix – AwardBIOS CMOS Setup Utility
Onboard Device
USB Controller [Enabled]
USB 2.0 Controller [Enabled]
USB Keyboard Support [Enabled]
USB Mouse Support [Enabled]
Azalia/AC97 Audio Select [Auto]
Item Help
Menu Level►
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

USB Controller

This item allows you to enable or disable onboard USB controller. Options are**: Enabled** and Disabled.

USB 2.0 Controller

This item allows you to enable or disable USB 2.0 feature of onboard USB controller. Options are**: Enabled** and Disabled.

USB Keyboard Support

This item determines if USB keyboard is supported in MS DOS. Options are**: Enabled** and

Disabled.

USB Mouse Support

This item determines if USB mouse is supported in MS DOS. Options are**: Enabled** and Disabled.

Azalia/AC97 Audio Select

This item is used to select Audio mode.

Select "Super IO Device" item and press "Enter" for setup of Super IO devices, as shown by the following figure:

Phoenix – AwardBIOS CMOS Setup Utility

Super IO Device

Onboard Parallel Port [378/IRQ7] Parallel Port Mode [Standard] X ECP Mode Use DMA 3 Onboard Serial Port 1 [3F8/IRQ4] Onboard Serial Port 2 [2F8/IRQ3] UART2 Mode Select [Normal] X RXD , TXD Active Hi, Lo X IR Transmission Delay Enabled X UART2 Duplex Mode Half X Use IR Pins IR-Rx2Tx2 Onboard Serial Port 3 [3E8/IRQ4] Onboard Serial Port 4 [2E8/IRQ3] Onboard Serial Port 5 [4F8/IRQ4] Onboard Serial Port 6 [4E8/IRQ3] Power On By PS/2 Keyboard [Disabled] Watch Dog Timer Select [Disabled]	Item Help Menu Level►

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help

F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Onboard Parallel Port

This item allows you to determine the I/O address and corresponding interrupts for the onboard parallel port LPT. Options are: Disabled, **378/IRQ7**, 278/IRQ5 and 3BC/IRQ7.

Onboard Serial Port 1/2/3/4

These four selection fields allow you to select the I/O address and corresponding interrupts for serial port COM1/2/3/4. Options are: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4 and 2E8/IRQ3.

Onboard Serial Port 5/6

These two selection fields allow you to select the I/O address and corresponding interrupts for serial port COM5/6. Options are: Disabled, 4F8/IRQ4 and 4E8/IRQ3.

UART Mode Select

Generally, Onboard Serial Port 2 of motherboard can also be used as infrared port. This item allows you to determine whether Onboard Serial Port 2 is used as normal serial port or infrared port. Four options are available:

Normal (used as serial port)
IrDA (used as standard infrared port)
ASKIR (used as responder infrared port)

UR2 Duplex Mode

This item will be set to Half Duplex (Half) mode unless your infrared device supports Full Duplex (Full) mode.

Power On By PS/2 Keyboard

Three options are available:
Disabled
Any key
Keyboard 98

Watch Dog Timer Select

Eight options are available: **Disabled**, 10Sec, 20Sec, 30Sec, 40Sec, 1Min, 2Min and 4Min

3.6 Power Management Setup

Power Management Setup allows you to configure your system to ensure an enhanced power-saving effect when user is compliant with system mode.

Phoenix – AwardBIOS CMOS Setup Utility

Power Management Setup

Power Status After AC Fail [Former Status] ▲	Item Help
ACPI Function [Enabled]	
Power Management [User Define]	Menu Level►
Video Off Method [DPMS]	
Video Off In Suspend [Yes]	
Suspend Type [Stop Grant]	
MODEM Use IRQ [3]	
Suspend Mode [Disabled]	
HDD Power Down [Disabled]	
Soft-Off by PWR-BTTN [Instant-Off]	
Resume by Alarm [Disabled]	
X Date{Of Month} Alarm 0	
X Time{hh:mm:ss} Alarm 0 : 0 : 0	
** Reload Global Timer Events **	
Primary IDE 0 [Disabled]	
Primary IDE 1 [Disabled]	
Secondary IDE 0 [Disabled]	
Secondary IDE 0 [Disabled]	
FDD,COM,LPT Port [Disabled]	
PCI PIRQ[A-D]# [Disabled]	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help

F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

PWR Status After PWR Fail

Three options are available:

Former Status (restore to former status)

Turn On (start up when power is restored)

Keep Off (remain powered off)

ACPI Function

This item allows you to enable/disable ACPI functions. Options are: **Enabled** and Disabled.

Power Management

This category allows you to select the type (or degree) of power saving and gives you direct assess to the following modes:

1. Suspend Mode
2. HDD Power Down

Three options are available for Power Management, including two fixed modes.

User Define---It allows you to set each mode individually. When not disabled, each of the ranges is from 1min to 15min.

Min Saving---Minimum power management. Suspend Mode=1hr and HDD Power Down=15min.

Max Saving---Maximum power management. Suspend Mode=1min and HDD Power Down=1min.

Video Off Method

This item determines the display type of monitor.

V/HSYNC+Blank	This option turns off the vertical and horizontal synchronization ports and writes blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	This option controls initial display of power management signal.

Video Off In Suspend

This item determines the display type to be cleared by monitor.

Options are: **Yes** and No.

Suspend Type

This item is used to select suspend type. Options are: PWRON Suspend and **Stop Grant**.

Modem Use IRQ

This item determines the IRQ used by Modem.

Options are: **3**, 4, 5, 67, 9, 10, 11 and NA.

Suspend Mode

When enabled, after the set time of system inactivity, all devices except the CPU will be shut off. Options are: 1/2/4/8/12/20/30/40Min, 1Hour and **Disabled**.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk will be powered down

while all other devices remain active. Options are: 1/2/3/4/5/6/7/8/9/10/11/12/13/14/15Min and **Disabled.**

Soft-Off by PWR-BTTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state. Options are: Delay4Sec and **Instant-Off**.

Resume by Alarm

This feature determines whether to power on the system at a desired time. When set to Disabled, the feature is inactivated; when set to **Enabled**，date and time of power on can be set:

Date(of month) Alarm Turn on the system at a specific time on each day or on a specific day in a month. If set to **0**，the system will be powered on once every day.

Time(hh:mm:ss) Alarm Set the time (hh:mm:ss) at which the system will be powered on automatically.

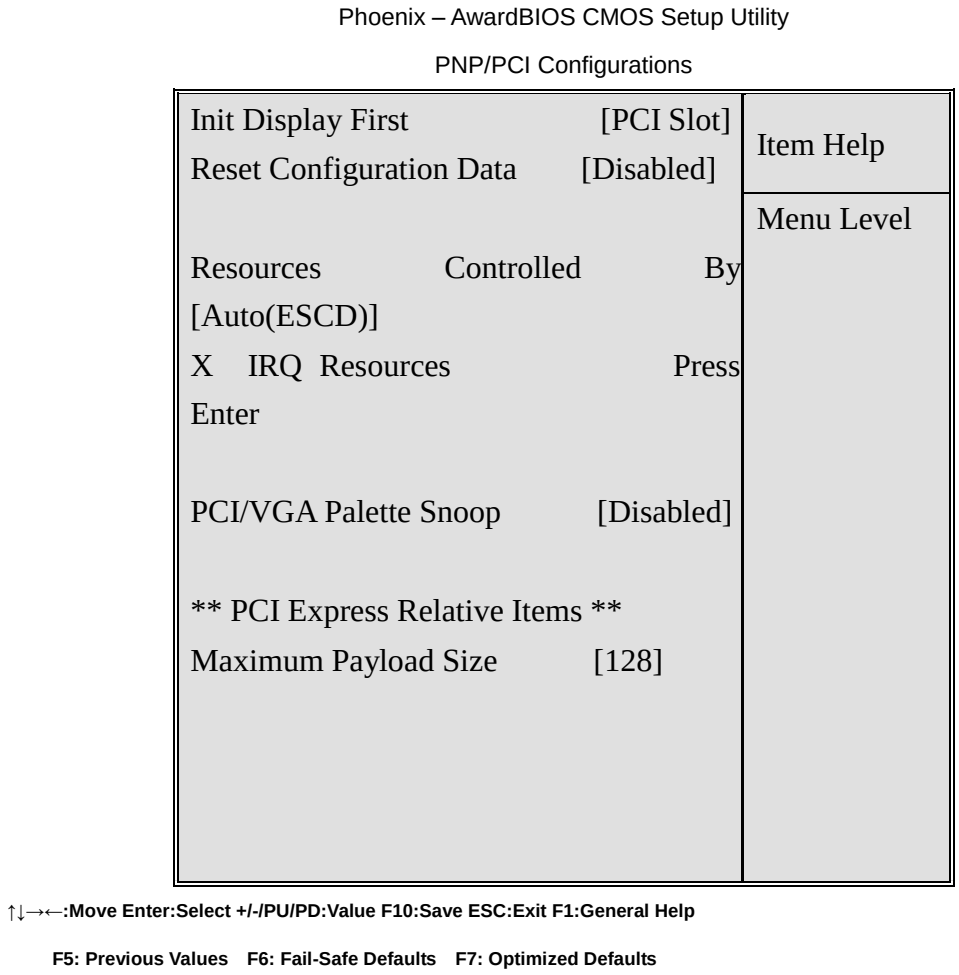
Note: You must restart the system after changing relevant settings, or the setting may not be effective.

**** Reload Global Timer Events ****

This module contains six modules, all of which are provided with two options: Enable and Disable. If set to Enable, the system will be awakened from sleep status when specific event occurs.

3.7 PnP/PCI Configurations Setup

This part describes configurations to be made on PCI bus system. PCI, namely Personal Computer Interconnect, is a computer bus that allows I/O device to operate nearly as fast as CPU in its own way. Some technical terms will be mentioned here. We recommend that non-professional users not make changes from factory default settings.


Phoenix – AwardBIOS CMOS Setup Utility
PNP/PCI Configurations
Init Display First [PCI Slot]
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
X IRQ Resources Press Enter
PCI/VGA Palette Snoop [Disabled]
** PCI Express Relative Items **
Maximum Payload Size [128]
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Init Display First

PCI Slot (PCI display device)

Onboard (Onboard display device)

PCiEx (PCIE device)

Reset Configuration Data

Normally, you should set this item to Disabled. If you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot up, then select Enabled. This will reset the Extended System Configuration Data (ESCD) after exiting from Setup. Options are: Enabled and **Disabled.**

Resource Controlled By

Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95/98. If set to Manual, you may have access into each submenu under this item (each submenu begins with "➢") and select specific resource manually. Options are: **Auto(ESCD)** and Manual.

IRQ Resources

This item determines whether IRQ interrupt is assigned to Plug-and-Play device or Non-Plug-and-Play ISA device.

PCI/VGA Palette Snoop

This item should be left Disabled. Options are: Enabled and **Disabled**.

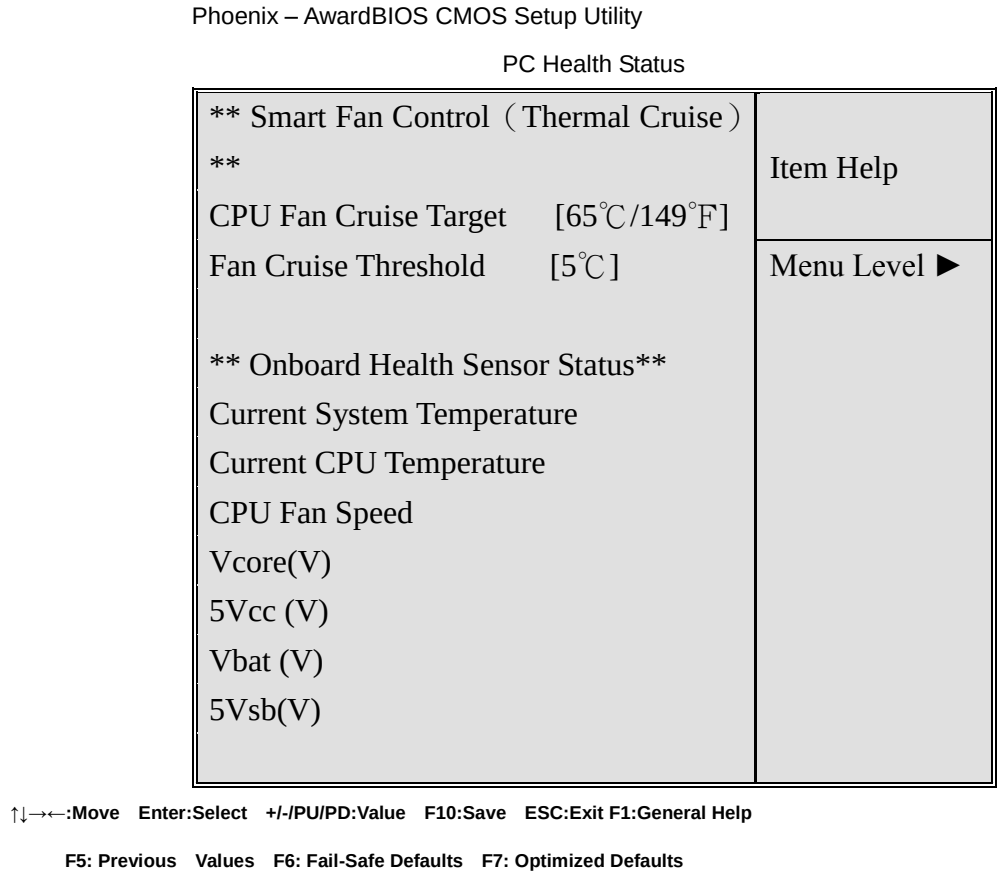
**** PCI Express Relative Items ****

Maximum Payload Size [128]

This item allows you to configure maximum payload size of TLP (Transition Layer Packet). Options are: [128], [256], [512], [1024], [2048] and [4096].

3.8 PC Health Status

This item shows the current operation status of system.



This module mainly shows motherboard information on current operating voltage, CPU temperature, system temperature and fan rotation speed. Refer to actual screen for name of each column.

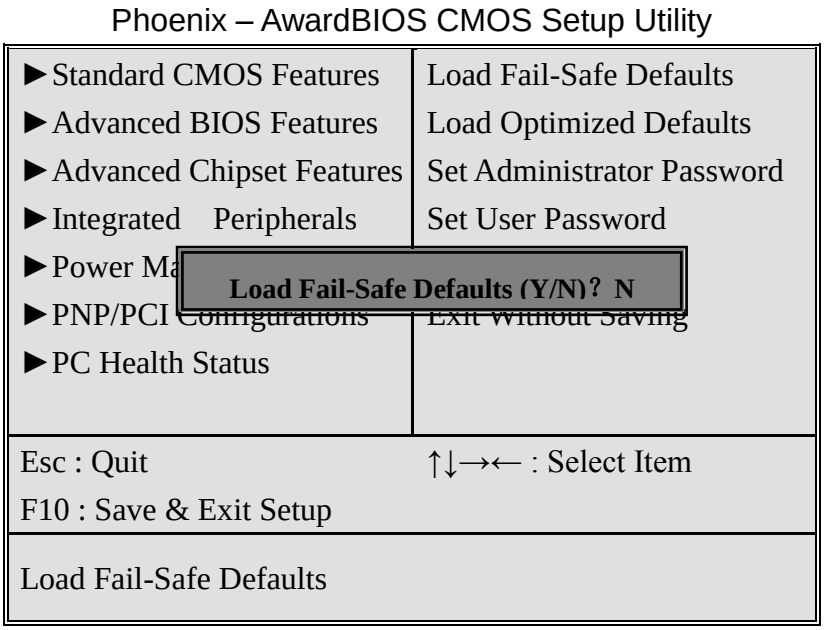
CPU Fan Cruise Target/Fan Cruise Threshold: this item determines the rotation condition of fan when CPU temperature reaches preset value. Options of CPU Fan Cruise Target are: Disable, 55℃/131℉, 60℃/140℉ and **65℃/149℉**; Options of Fan Cruise Threshold are ±2℃, ±3℃, ±4℃ and **±5℃**.

For example, set CPU Fan Cruise Target to <65℃/149℉> and Fan Cruise Threshold to <±5℃>. When CPU temperature rises to 70℃ (65℃+5℃), the fan will begin to rotate; when CPU temperature drops to 60℃ (65℃-5℃), the fan will stop rotating.

3.9 Load Fail-Safe/Optimized Defaults

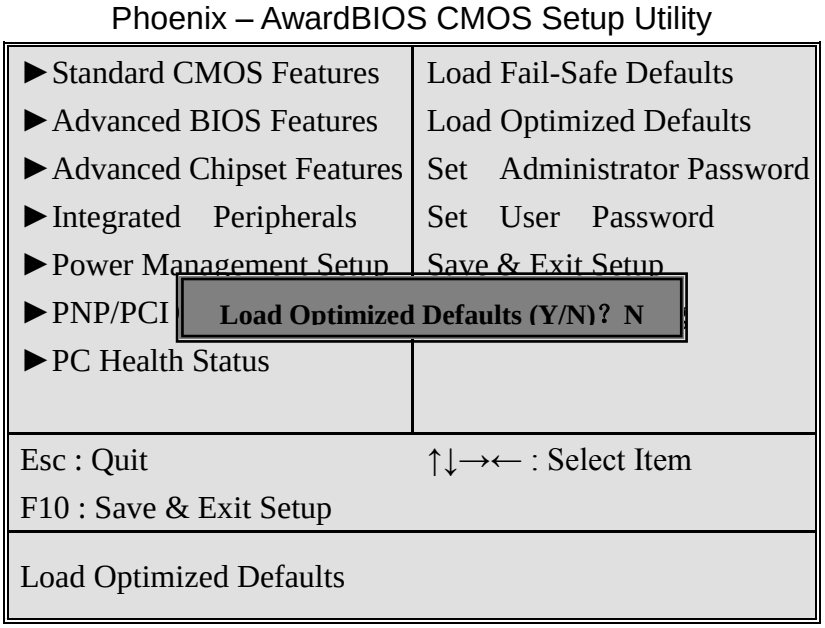
These two items allow users to load fail-safe or optimized defaults to restore BIOS. Optimized defaults refer to the specific values set by motherboard manufacturer for optimized performance, while fail-safe defaults stand for settings made by BIOS distributor for stable performance.

If you select Load Fail-Safe Defaults, the following information will be shown:



Press **Y** to load **BIOS** defaults for stable, but lower performance.

If you select **Load Optimized Defaults**, the following information will be shown:

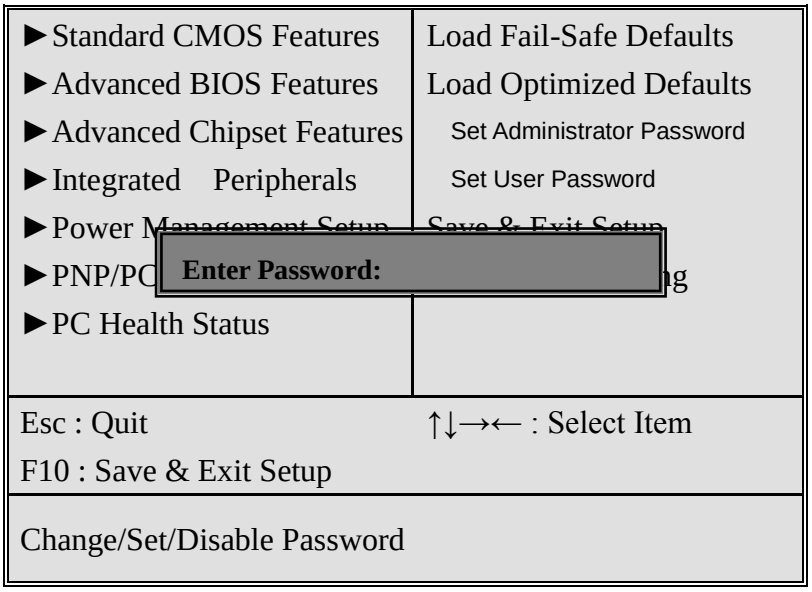


Press **Y** to load factory settings delivering optimized performance.

3.10 Set Administrator/User Password

When selecting this feature, the following information will be shown:

Phoenix – AwardBIOS CMOS Setup Utility



Type the password with up to 8 characters and then press ≺Enter≻ key. This will clear all previously typed CMOS passwords. You will be requested to confirm the password. Type the password again and press ≺Enter≻ key. You may press ≺Esc≻ key to abandon password entry operation.

To clear the password, just press ≺Enter≻ key when password input window pops up. A confirmation message will be shown on the screen as to whether the password will be disabled. You will have direct access to BIOS setup without typing any password after system reboot once the password is disabled.

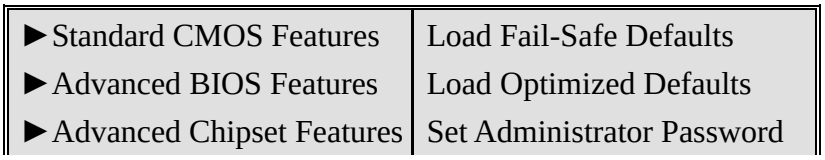
Once the password feature is used, you will be requested to type the password each time you enter BIOS setup. This will prevent unauthorized persons from changing your system configurations.

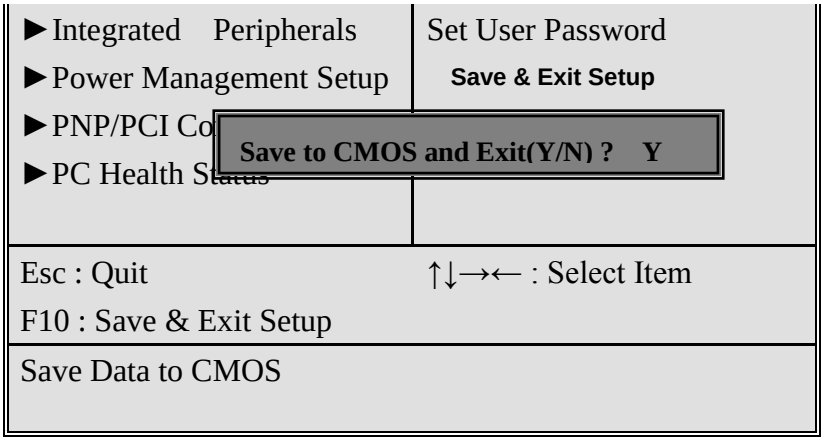
Also, the feature is capable of requesting users to enter the password prior to system boot to control unauthorized access to your computer. Users may enable the feature in Security Option of Advanced BIOS Features. If Security Option is set to System, you will be requested to enter the password before system boot and when entering BIOS setup; if Security Option is set to Setup, you will be requested for password for entering BIOS setup.

3.11 Save & Exit Setup

When selecting this item, the following information will be shown:

Phoenix – AwardBIOS CMOS Setup Utility

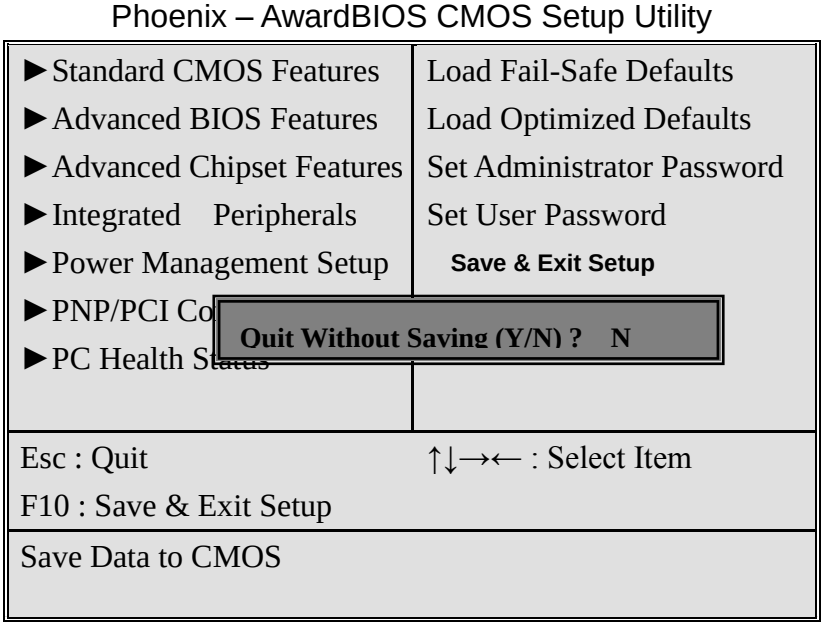




Press **Enter** key to save the changes and exit from BIOS setup.

3.12 Exit Without Saving

When selecting this item, the following information will be shown:



Press **Y** and then **Enter** key to exit from BIOS setup without saving the changes.

Chapter 4
Examples of GPIO Programming

4.1 SuperIO Model: Winbond W83627UHG

- GPIO OUT use GP 60~63
- GPIO IN use GP 20~23

4.2 W83627UHG Access index port: 4Eh/4Fh

- Index Address Port: 4Eh
- Index Data Port: 4Fh

4.3 Configure GPIO register sequence

1. Enter the extended function mode
2. Select logic device number 8
3. Activate the logic device GPIO Port 6
4. Configure GPIO Port 6 register
5. Select logic device number 9
6. Activate the logic device GPIO Port 2
7. Configure GPIO Port 2 register
8. Exit the extended function mode

4.4 Read/write GPIO sequence

1. Enter the extended function mode
2. Select logic device number
3. Read/write GPIO register value
4. Exit the extended function mode

4.5 Software programming example

- **Enter the extended function mode**

  Writing 87h to index address port twice will enter the extended function mode.

  Example x86 assembly code:

```
mov     dx, 4Eh
mov     al, 87h
out     dx, al
out     dx, al
```

  Example C code:

```
outportb(0x4E, 0x87);
outportb(0x4E, 0x87);
```

- **Exit the extended function mode**

Writing AAh to index address port will exit the extended function mode.

Example x86 assembly code:

```
mov     dx, 4Eh
mov     al, 0AAh
out     dx, al
```

Example C code:

```
outportb(0x4E, 0xAA);
```

- **Select logic device number**

Example x86 assembly code:

```
mov     dx, 4Eh
mov     al, 007h        ;LDN selection register
out     dx, al
mov     dx, 4Fh
mov     al, 008h        ;Select LDN=8, GPIO Port6
                              ;or Select LDN9, GPIO Port2
out     dx, al
```

Example C code:

```
outportb(0x4E, 0x07);       //LDN selection register
outportb(0x4F, 0x08);  //Select LDN=8, GPIO Port6
or
outportb(0x4E, 0x07);       //LDN selection register
outportb(0x4F, 0x09);  //Select LDN=9, GPIO Port2
```

- **Activate the logic device**

Example x86 assembly code:

```
mov     dx, 4Eh
mov     al, 030h        ;Logic device activation control reg.
out     dx, al
mov     dx, 4Fh
in      al, dx
   or       al, 004h        ;Set bit2 to enable GPIO Port6 if LDN=8
   or       al, 002h        ;Set bit1 to enable GPIO Port2 if LDN=9
out     dx, al
```

Example C code:

```
outportb(0x4E, 0x30);       //Logic device activation control
```

```
outportb(0x4F, (inportb(0x4F)|0x2));
                                    //Set bit[1] to enable GPIO Port2 if LDN=9
```

Or

```
outportb(0x4E, 0x30);       //Logic device activation control
outportb(0x4F, (inportb(0x4F)|0x4));
                                    //Set bit[2] to enable GPIO Port6 if LDN=8
```

- **Configure GPIO register**

Example x86 assembly code:

```
mov     dx, 4Eh
mov     al, 0E6h        ;GPIO inversion reg.
out     dx, al
mov     dx, 4Fh
   mov      al, 000h        ;0 – normal, 1 - inverted
out     dx, al

mov     dx, 4Eh
mov     al, 0E4h        ;GPIO I/O selection reg.
out     dx, al
mov     dx, 4Fh
   mov      al, 0FFh        ;0 – Output, 1 – Input
                            ;or mov al, 0F0h to set output
out     dx, al
```

Example C code:

```
outportb(0x4E, 0xE6);       //GPIO I/O selection reg.
outportb(0x4F, 0x0);    //0 – normal, 1 - inverted

outportb(0x4E, 0xE4);       //GPIO inversion reg.
outportb(0x4F, 0xFF);       //0 – Output, 1 - Input
```

or

```
outportb(0x4E, 0xE4);       //GPIO inversion reg.
outportb(0x4F, 0xF0);       //0 – Output, 1 - Input
```

- **Read GPIO value**

Example x86 assembly code:

```
mov     dx, 4Eh
mov     al, 0E5h        ;GPIO data reg.
out     dx, al
mov     dx, 4Fh
in      al, dx              ;Bit[3::0] = GPI[3::0] value
```

Example C code:

```
outportb(0x4E, 0xE5);        //GPIO data reg.
GP = inportb(0x4F);          //Bit[3::0] = GPI[3::0]
```

- **Write GPIO value**

Example x86 assembly code:

```
;Set GPO62
 mov     dx, 4Eh
 mov     al, 0E5h       ;GPIO data reg.
 out     dx, al
 mov     dx, 4Fh
 in      al, dx
or       al, 00000100b          ;Bit2 = GPO62
 out     dx, al

;Clear GPO62
 mov     dx, 4Eh
 mov     al, 0E5h       ;GPIO data reg.
 out     dx, al
 mov     dx, 4Fh
 in      al, dx
 and     al, not 00000100b
 out     dx, al
```

Example C code:

```
//Set GPO62
 outportb(0x4E, 0xE5);                          //GPIO data reg.
 Outportb(0x4F, (inportb(0x4F)|0x4));       //Set Bit[2]

//Clear GPO62
 outportb(0x4E, 0xE5);                          //GPIO data reg.
 Outportb(0x4F, (inportb(0x4F)&0xFB));   //Clear Bit[2]
```

The followings are C language source code:

```
#include "stdio.h"
#include "conio.h"

//Super I/O index access port
#define INDEXP        0x4E
#define DATAP         0x4F
```

```
//Enter super I/O programming mode
#define ENTERPRG {              \
      outportb(INDEXP, 0x87);   \
      outportb(INDEXP, 0x87);}

//Super I/O index write
#define WRITEREG(reg,val) {   \
      outportb(INDEXP, reg);      \
      outportb(DATAP, val);}

//Exit super I/O programming mode
#define EXITPRG {           \
      outportb(INDEXP, 0xAA);}

//Select logic device number
#define SELETDEV(ldn) {        \
      outportb(INDEXP, 7);  \
      outportb(DATAP, ldn); }

//Initialize the GPIO port2
int InitGP2() {

      //Start the super I/O chip programming
      ENTERPRG

      //Select the logical device 9, GP2
      SELETDEV(9)

      //Activate GP1
      WRITEREG(0x30, (inportb(0x30)|0x2))

      WRITEREG(0xE6, 0x0)
      WRITEREG(0xE4, 0xFF)

      //Exit the super I/O chip programming
      EXITPRG

      return 0;
}
```

```
//Initialize the GPIO port6
int InitGP6() {

	//Start the super I/O chip programming
	ENTERPRG

	//Select the logical device 8, GP6
	SELETDEV(8)

	//Activate GP1
	WRITEREG(0x30, (inportb(0x30)|0x4))

	WRITEREG(0xE6, 0x0)
	WRITEREG(0xE4, 0xF0)

	//Exit the super I/O chip programming
	EXITPRG

	return 0;
}

//Read GPIO Port2
unsigned char ReadGP2() {
	unsigned char cGP2;

	//Start the super I/O chip programming
	ENTERPRG

	//Select the logical device 9, GP2
	SELETDEV(9)

	//Read GPIO Value
	outportb(INDEXP, 0xE5);
	cGP2 = inportb(DATAP);
	cGP2 = cGP2 & 0xF;

	//Exit the super I/O chip programming
	EXITPRG

	return cGP2;
}
```

```
//Write GPIO Port6
int WriteGP6(unsigned char cGP6) {

	//Start the super I/O chip programming
	ENTERPRG

	//Select the logical device 8, GP6
	SELETDEV(8)

	//Write GP1 value
	WRITEREG(0xE5, cGP6)

	//Exit the super I/O chip programming
	EXITPRG

	return 0;
}

int main() {
	unsigned char cGP;

	//Initialize the GPIO port
	InitGP2();
	InitGP6();

	//Read GPIO Port 2
	cGP = ReadGP2();
	printf("\nRead GPIO Port 2 Status: %X", cGP);

	//Write GPIO Port 6
	WriteGP6(cGP);
	printf("\nSet GPIO Port 6 Status: %X", cGP);

	return 0;
}
```

Chapter 5

5 Watchdog Source Code

```
#include <windows.h>
#include <stdio.h>
#include "winio.h"

#define WDT_EFER 0x4E
#define WDT_EFIR 0x4E
#define WDT_EFDR 0x4F
#define WDT_EFCR 0x23

void enable_wd_1sec();
void disable_wd();

int main()
{


   // Call InitializeWinIo to initialize the WinIo library.
   bool bResult;
   bResult = InitializeWinIo();

   if (bResult)
   {
      enable_wd_1sec();
         while(1)
         {
               ;
         }

   }
   else
   {
      printf("Error during initialization of WinIo.\n");
      exit(1);
   }
```

```
   ShutdownWinIo();
      return 0;
}

//================================================
// Function : Enable Watch Dog Timer
// Enter       : None
// Return      : None
//================================================
void enable_wd_1sec()
{
      SetPortVal((DWORD)WDT_EFER, 0x87,0);
      SetPortVal((DWORD)WDT_EFER, 0x87,0);

      SetPortVal((DWORD)WDT_EFER, 0x07,1);
      SetPortVal((DWORD)WDT_EFDR, 0x08,1);

      SetPortVal((DWORD)WDT_EFER, 0x30,1);
      SetPortVal((DWORD)WDT_EFDR, 0x01,1);

      SetPortVal((DWORD)WDT_EFER, 0xF5,1);
      SetPortVal((DWORD)WDT_EFDR, 0x00,1);

      SetPortVal((DWORD)WDT_EFER, 0xF6,1);
      SetPortVal((DWORD)WDT_EFDR, 0x06,1);

      SetPortVal((DWORD)WDT_EFER, 0xAA,1);
      SetPortVal((DWORD)WDT_EFCR, 0x00,1);
}

void disable_wd()
{

      SetPortVal((DWORD)WDT_EFER, 0x87,0);
      SetPortVal((DWORD)WDT_EFER, 0x87,0);

      SetPortVal((DWORD)WDT_EFER, 0x07,1);
      SetPortVal((DWORD)WDT_EFDR, 0x08,1);

      SetPortVal((DWORD)WDT_EFER, 0x30,1);
      SetPortVal((DWORD)WDT_EFDR, 0x00,1);
```

```
    SetPortVal((DWORD)WDT_EFER, 0xF6,1);
    SetPortVal((DWORD)WDT_EFDR, 0x00,1);

    SetPortVal((DWORD)WDT_EFER, 0xAA,1);
    SetPortVal((DWORD)WDT_EFCR, 0x00,1);
}
```

Chapter 6

This chapter describes the installation procedures for software and drivers under the windows XP. The software and drivers are included with the motherboard. The contents include **Intel chipset driver VGA driver LAN drivers Audio driver**
Installation instructions are given below.

> **Important Note:**
> After installing your Windows operating system (Windows XP), you must install first the Intel Chipset Software Installation Utility before proceeding with the installation of drivers.

I

6.1 Intel Chipset Driver

To install the Intel chipset driver, please follow the steps below.

Step 1: Select Chipset from the list

Follow the step-by-step installation process to install the chipset driver.

Intel® Chipset Device Software
Intel® Chipset Device Software
intel
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
Refer to the Readme file below to view the system requirements and installation information. Press the Page Down key to view the rest of the file.
****
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 9.1.1.1019
* Target Chipset#: Intel(R) 5 Series/3400 Series Chipse
* Date: August 18 2009
****
< Back
Next >
Cancel
Intel® Installation Framework

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
Version: 9.1.1.1016
Installing Driver: Intel(R) ICH7M/U LPC Interface Controller - 27B9
Version: 9.1.1.1016
Installing Driver: Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
Version: 9.1.1.1016
Installing Driver: Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
Version: 9.1.1.1016
Installing Driver: Intel(R) N10/ICH7 Family SMBus Controller - 27DA
Version: 9.1.1.1016
Click Next to continue.
Next
Intel® Installation Framework

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

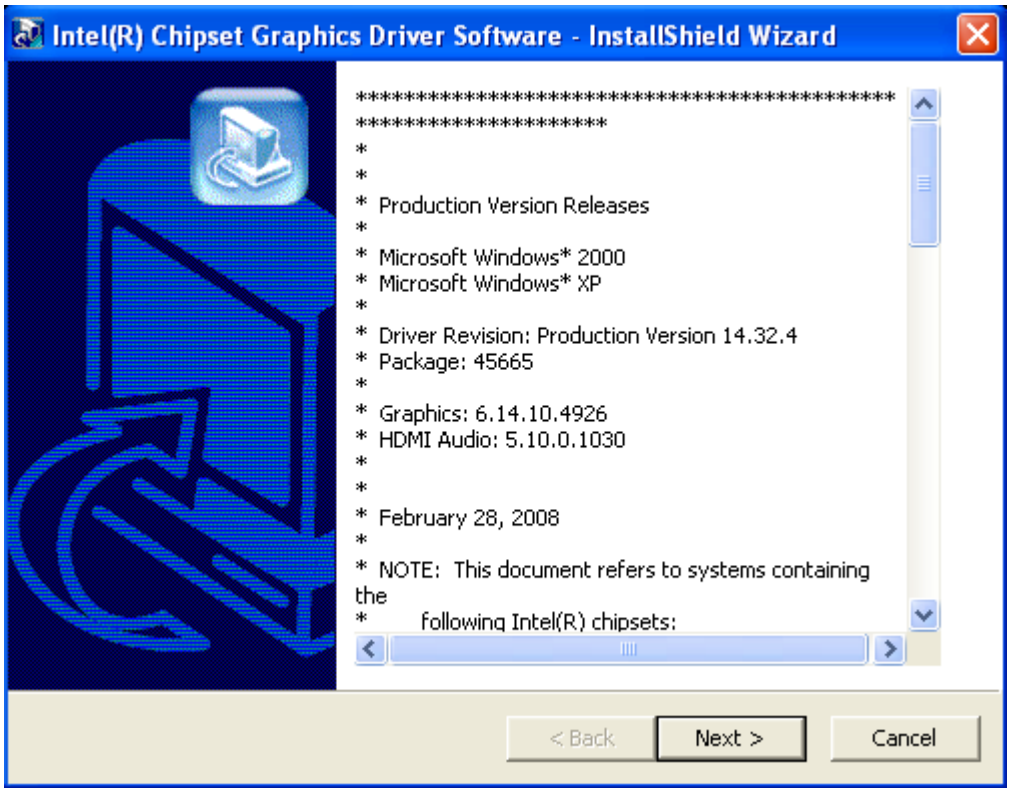
Click Finish, When the installation process is complete, the Setup Complete screen appears. See as picture.

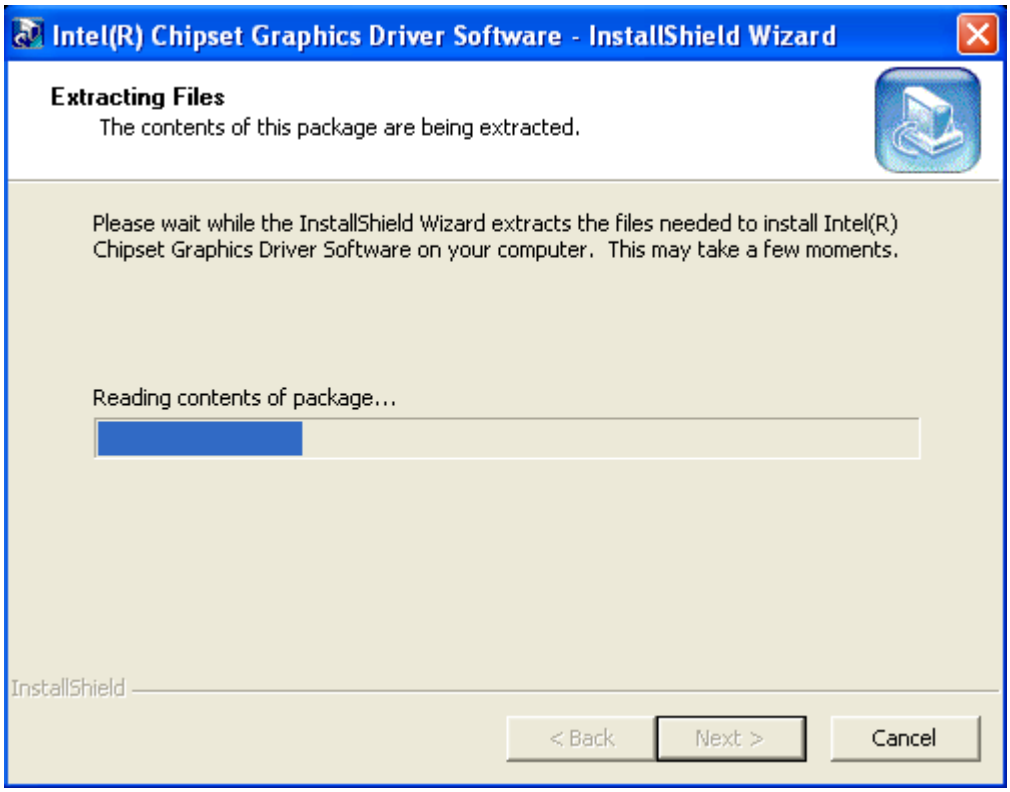
6.2 Intel Graphics Media Accelerator Driver

To install the VGA drivers, follow the steps below to proceed with the installation.

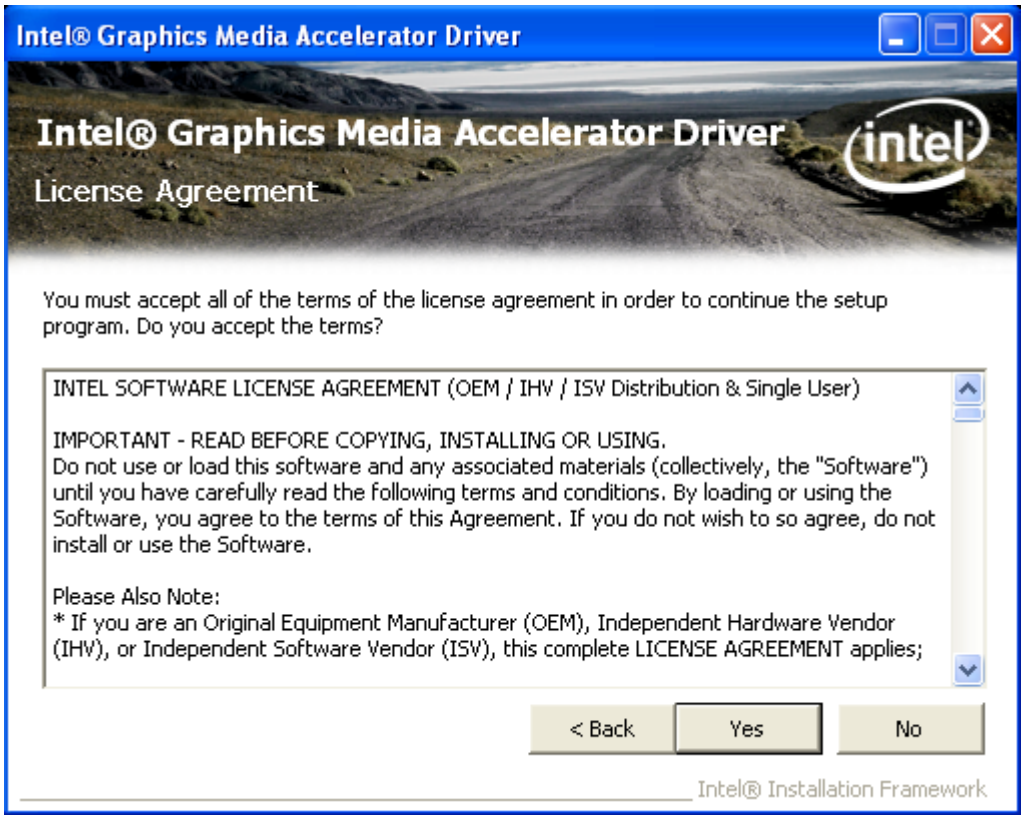
1. Click Intel(R) Chipset Family Graphics Driver.

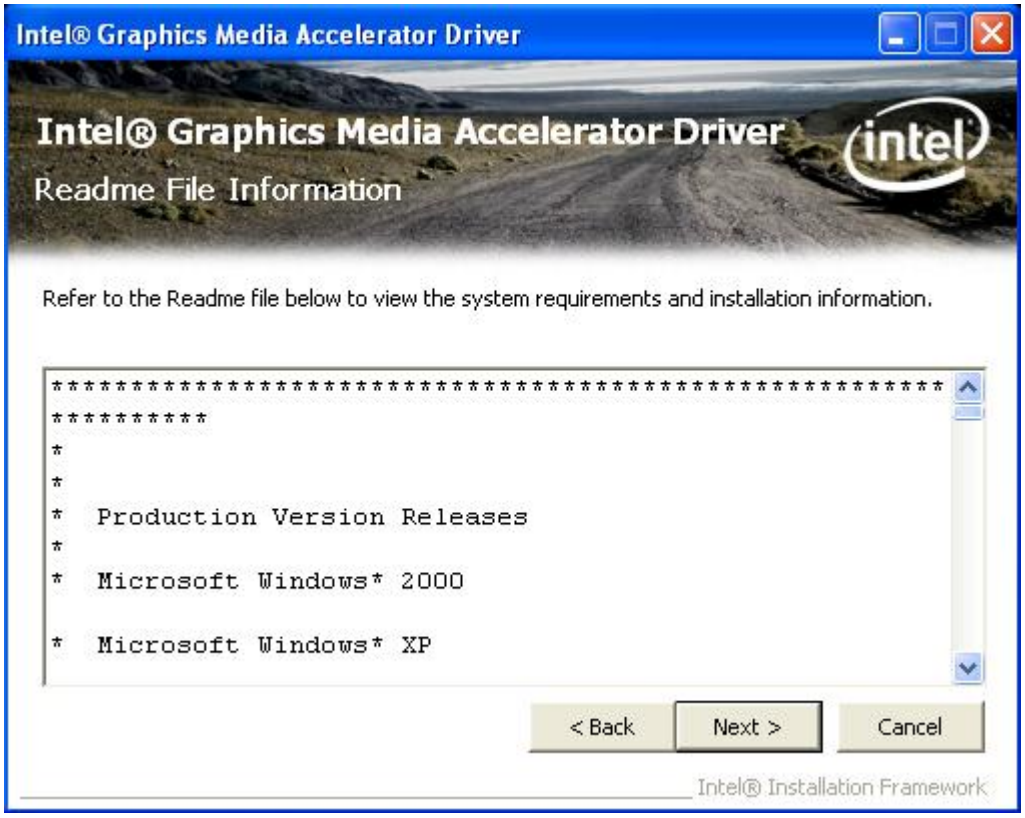
Follow the step-by-step installation process to install the Graphics Media Accelerator driver.

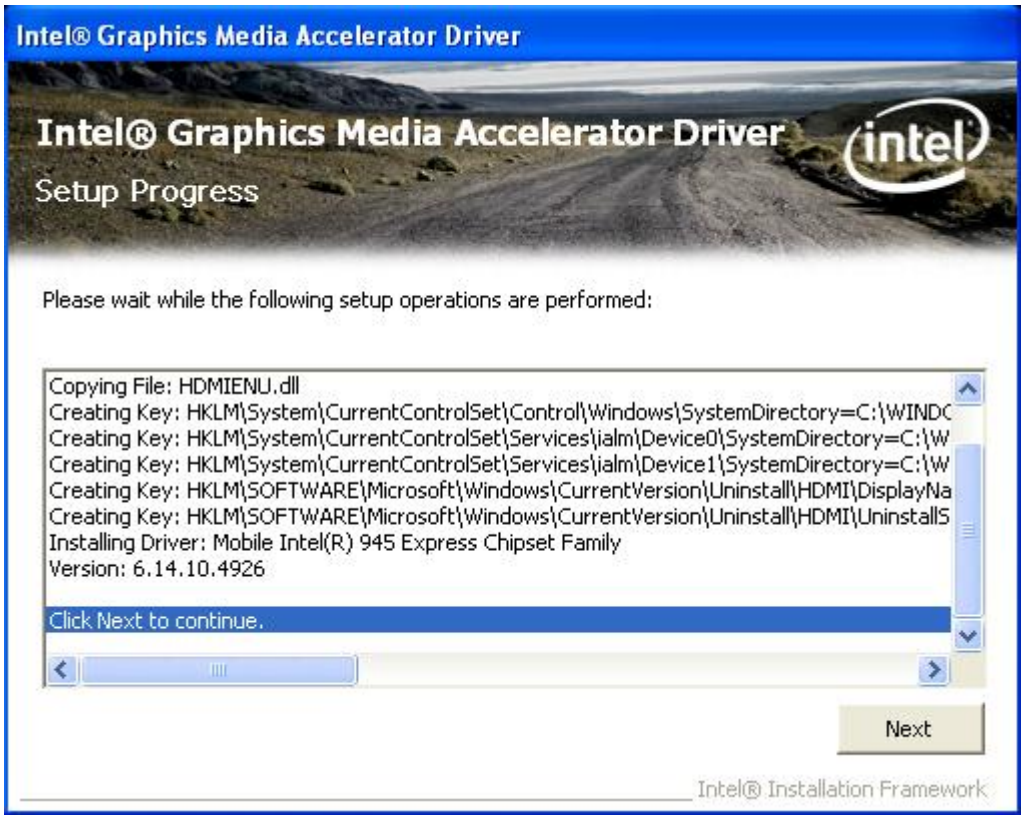

Intel(R) Chipset Graphics Driver Software - InstallShield Wizard
****
* Production Version Releases
* Microsoft Windows* 2000
* Microsoft Windows* XP
* Driver Revision: Production Version 14.32.4
* Package: 45665
* Graphics: 6.14.10.4926
* HDMI Audio: 5.10.0.1030
* February 28, 2008
* NOTE: This document refers to systems containing the
* following Intel(R) chipsets:
< Back
Next >
Cancel


Intel(R) Chipset Graphics Driver Software - InstallShield Wizard
Extracting Files
The contents of this package are being extracted.
Please wait while the InstallShield Wizard extracts the files needed to install Intel(R) Chipset Graphics Driver Software on your computer. This may take a few moments.
Reading contents of package...
InstallShield
< Back
Next >
Cancel

Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
intel
Welcome to the Setup Program
This setup program will install the Intel® Graphics Media Accelerator Driver onto this computer. It is strongly recommended that you exit all programs before continuing. Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
****
*
*
* Production Version Releases
*
* Microsoft Windows* 2000
* Microsoft Windows* XP
< Back
Next >
Cancel
Intel® Installation Framework



Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

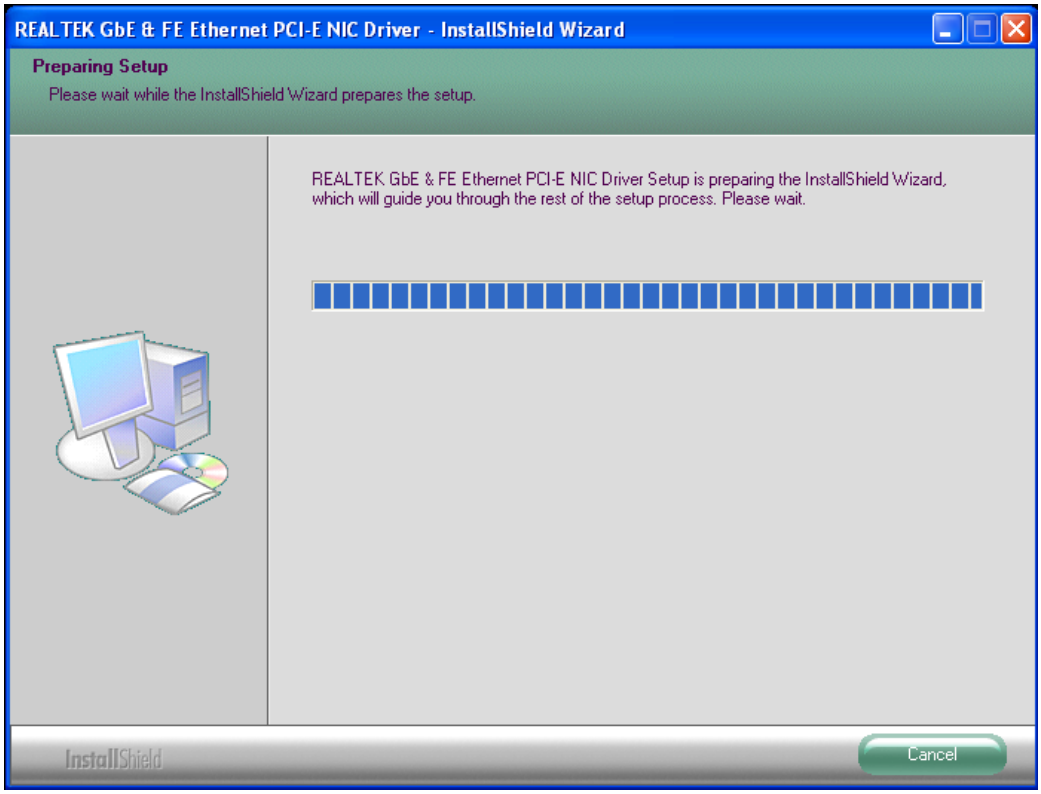
Click FINISH; A Driver Installation Complete.

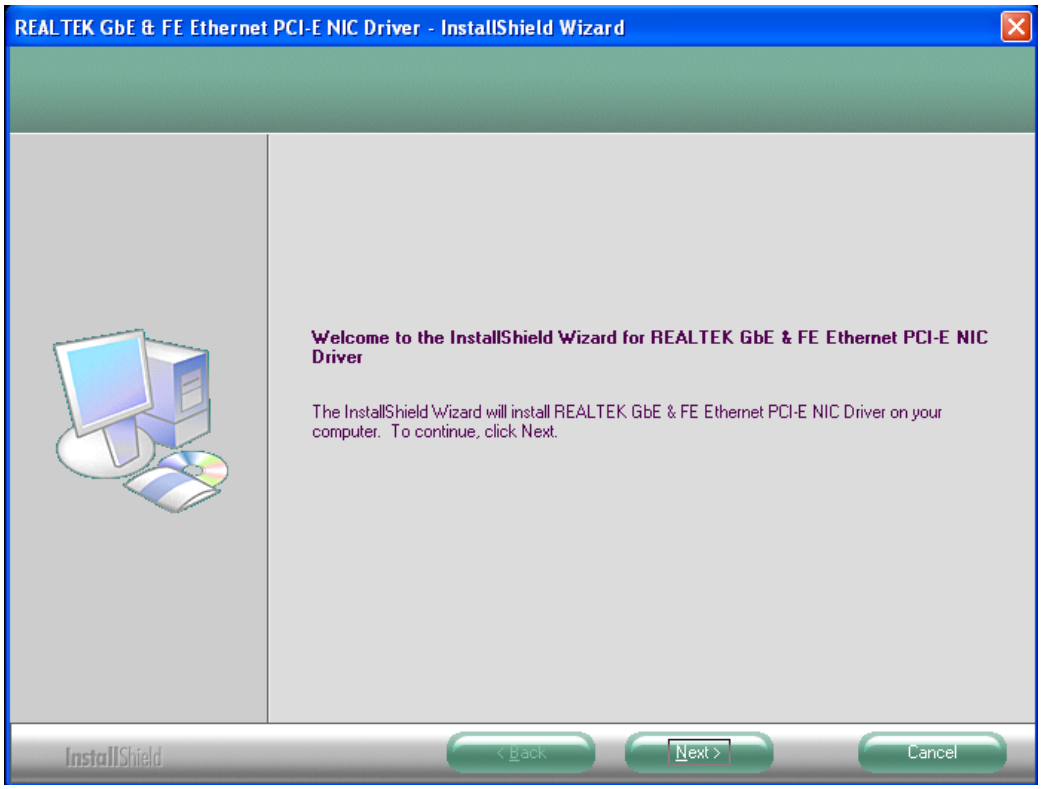
6.3 Realtek Gigabit LAN Driver

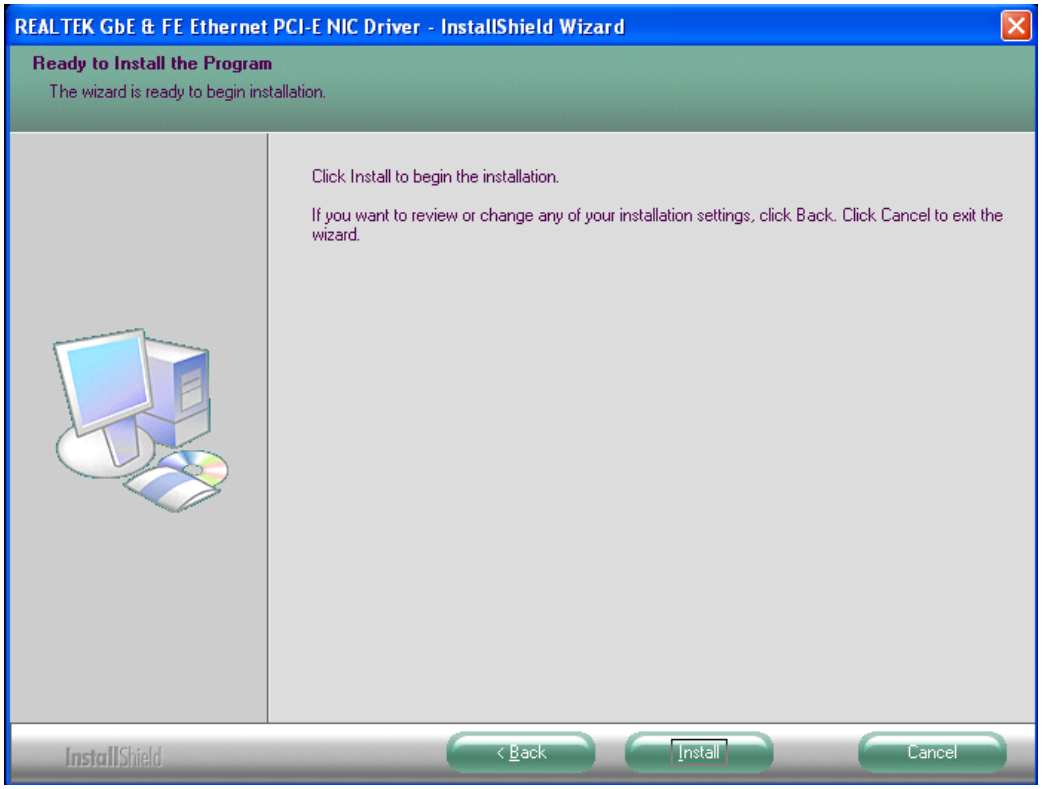
To install the Realtek Gigabit LAN connect device driver, please follow the steps below.

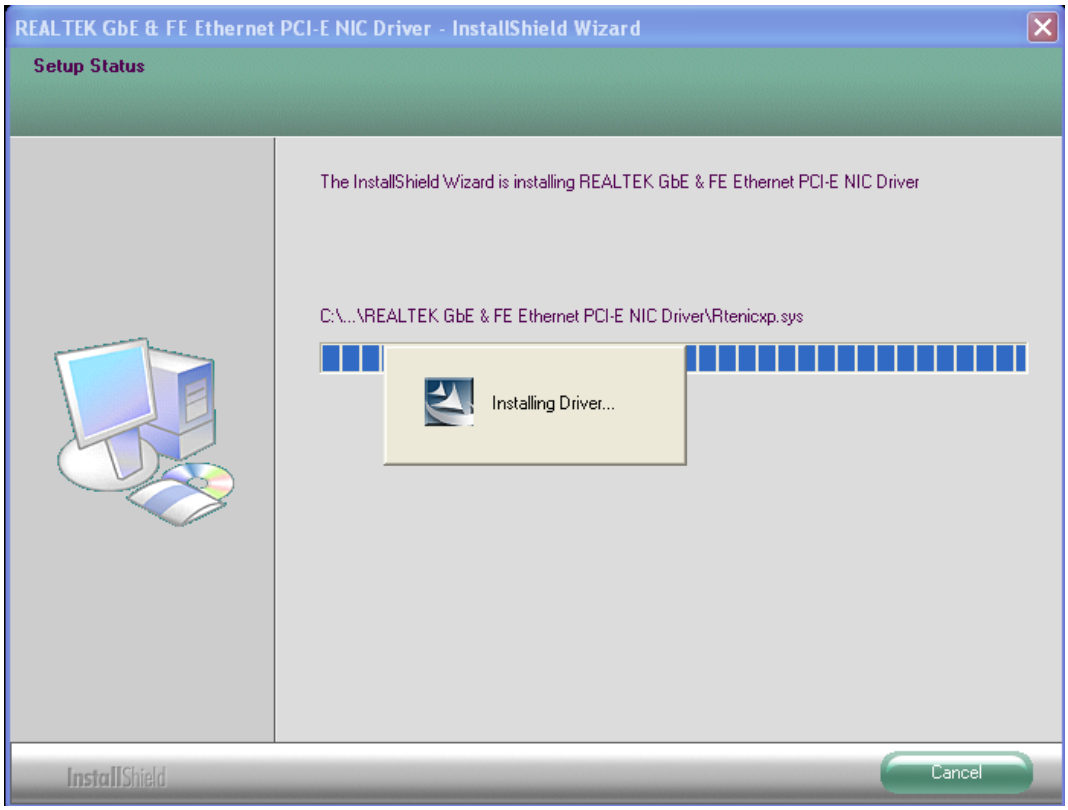
Select LAN from the list

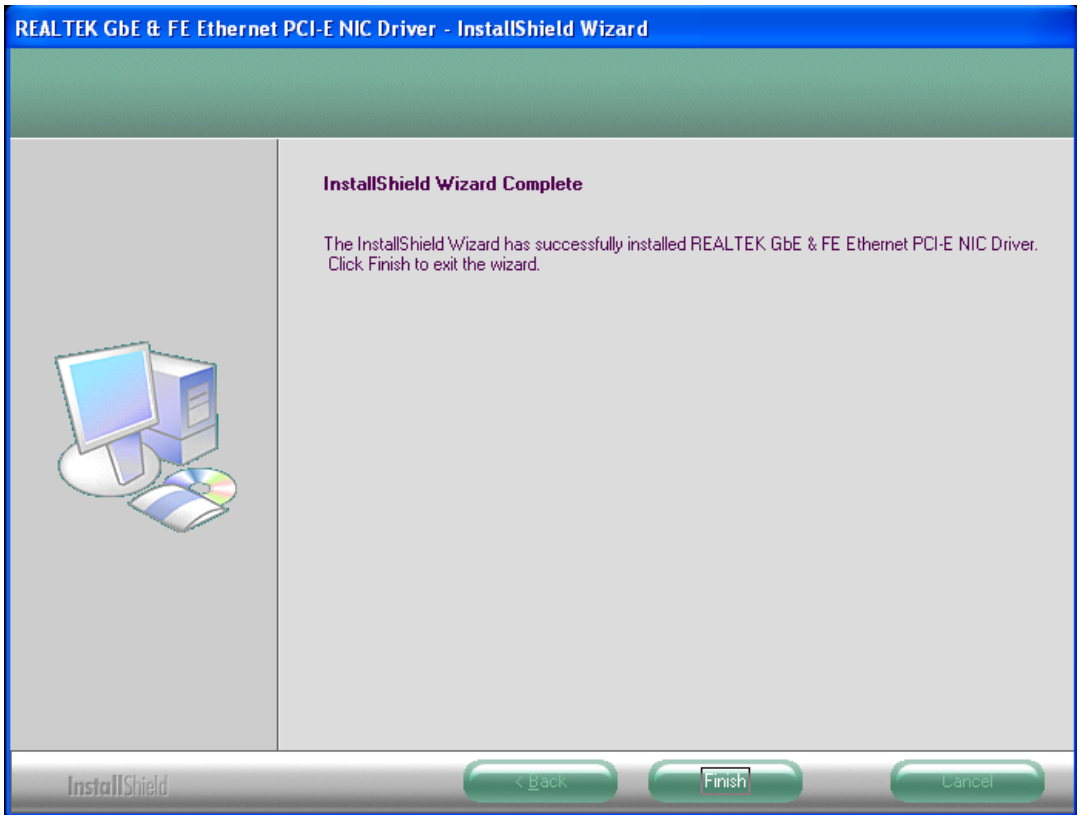
Follow the step-by-step installation process to install the LAN driver.


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Preparing Setup
Please wait while the InstallShield Wizard prepares the setup.
REALTEK GbE & FE Ethernet PCI-E NIC Driver Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.
InstallShield
Cancel


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Welcome to the InstallShield Wizard for REALTEK GbE & FE Ethernet PCI-E NIC Driver
The InstallShield Wizard will install REALTEK GbE & FE Ethernet PCI-E NIC Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Setup Status
The InstallShield Wizard is installing REALTEK GbE & FE Ethernet PCI-E NIC Driver
C:\...\REALTEK GbE & FE Ethernet PCI-E NIC Driver\Rtenicxp.sys
Installing Driver...
InstallShield
Cancel


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed REALTEK GbE & FE Ethernet PCI-E NIC Driver. Click Finish to exit the wizard.
InstallShield
< Back
Finish
Cancel

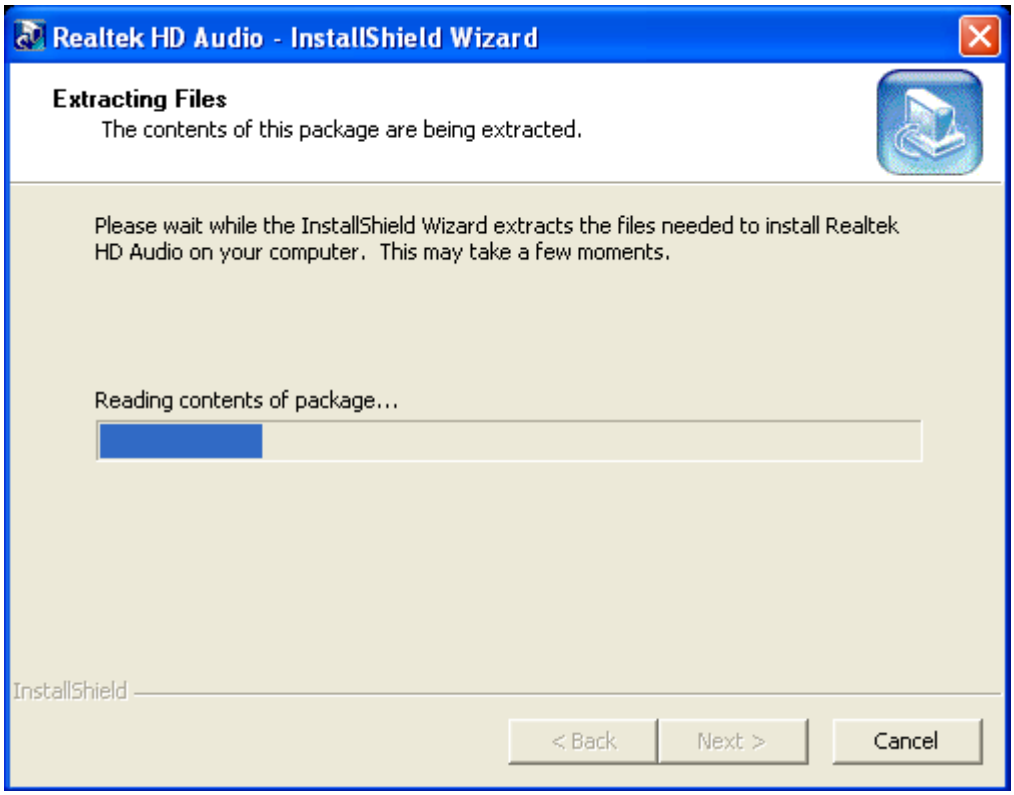
Click FINISH; A Driver Installation Complete.

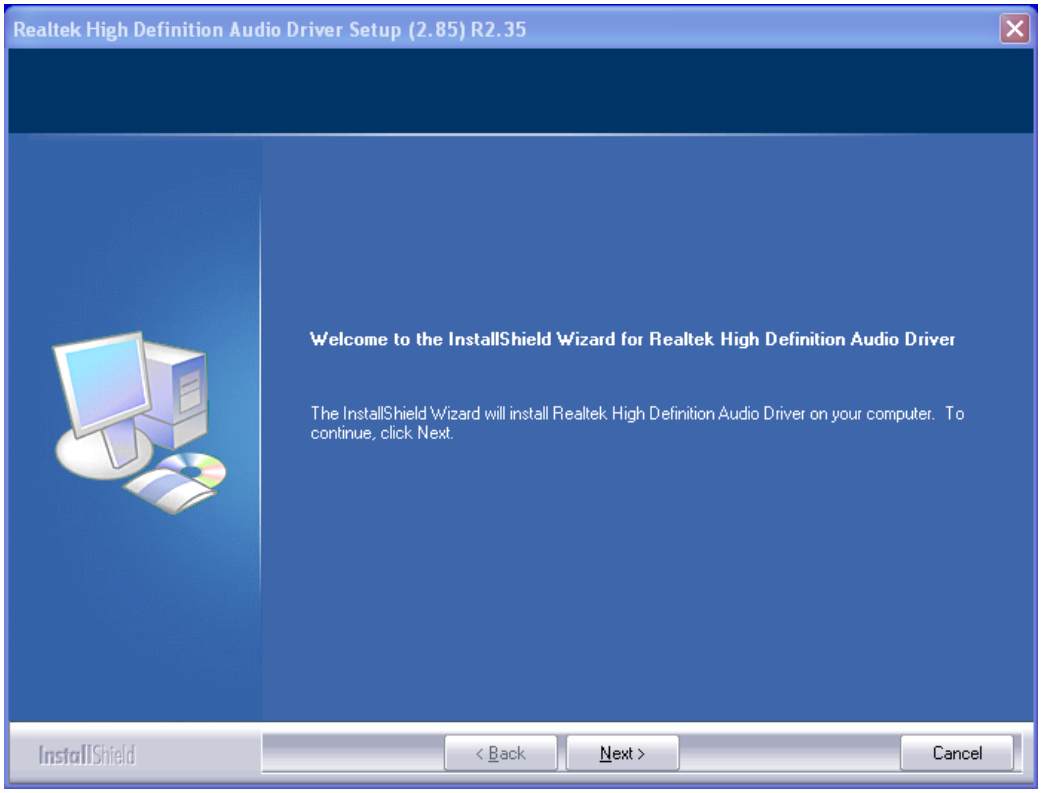
6.4 Realtek HD Driver Installation

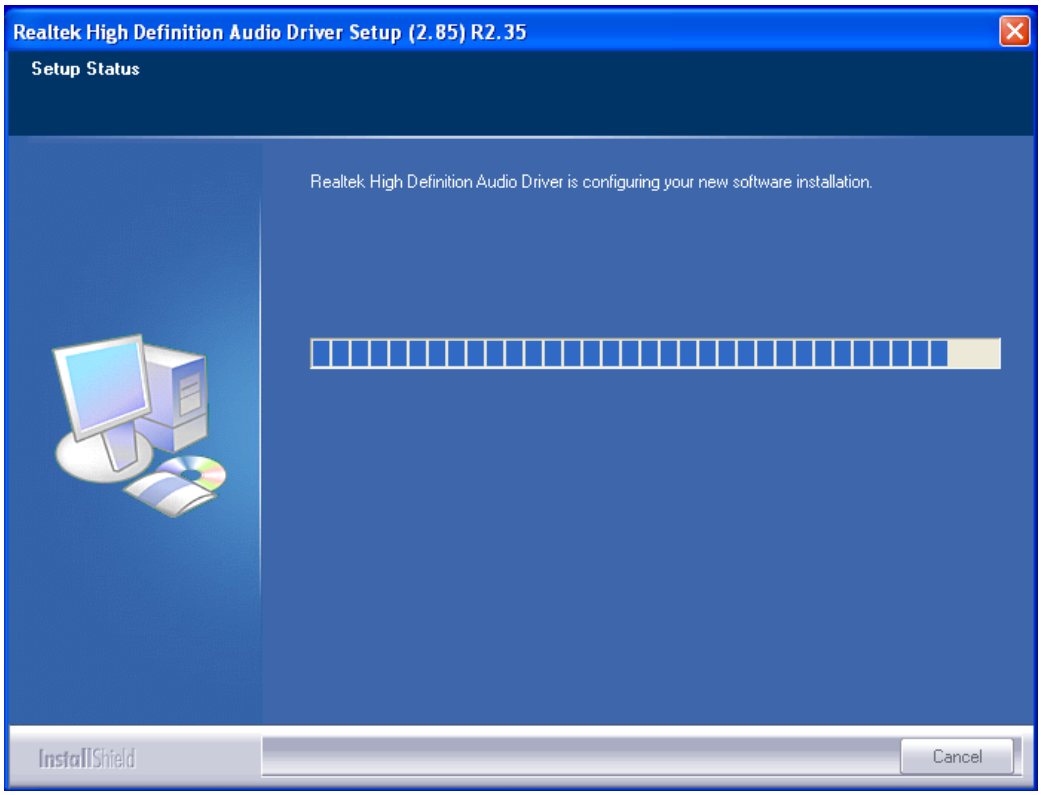
To install the Realtek HD Audio driver, please follow the steps below.

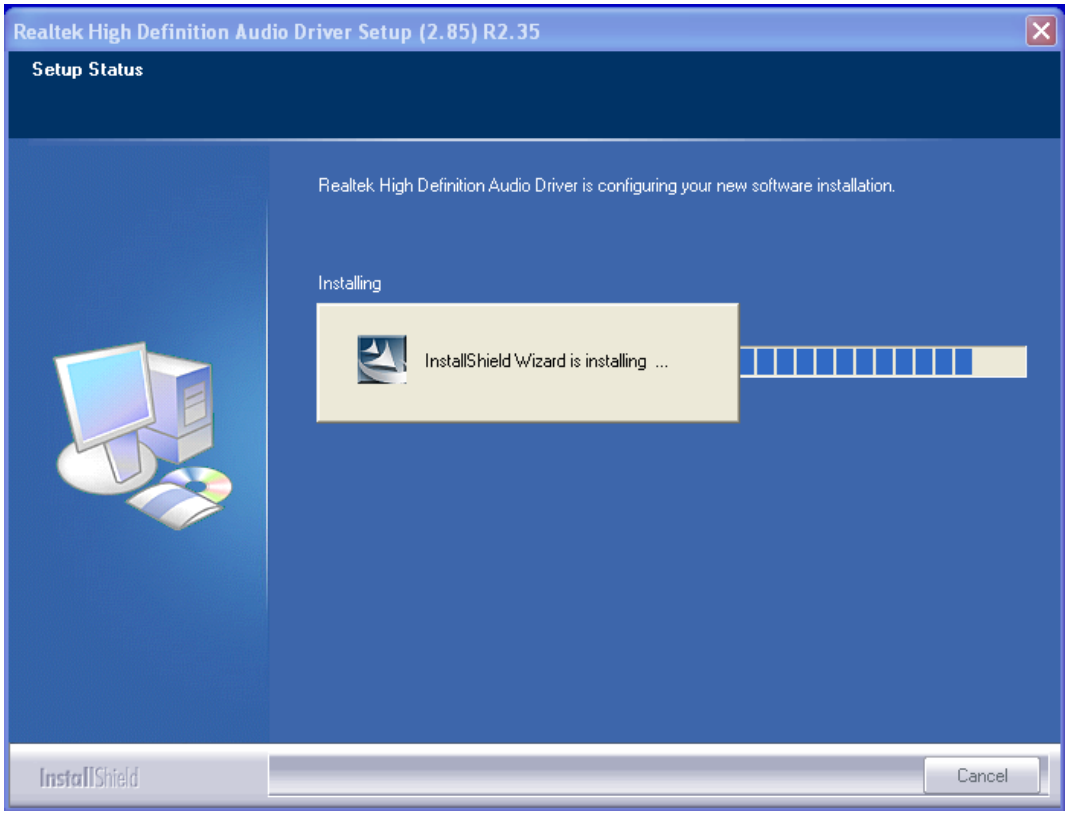
Select Audio from the list

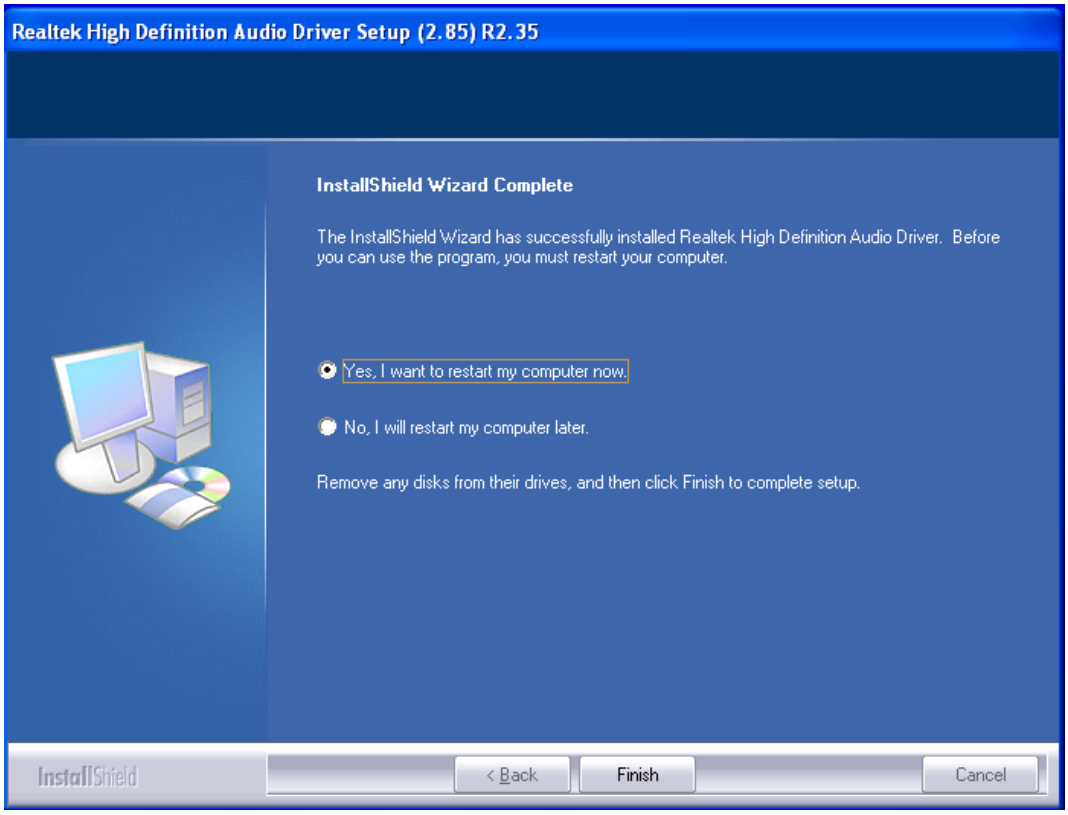
Follow the step-by-step installation process to install the Realtek AC'97Audio driver.


Realtek HD Audio - InstallShield Wizard
Extracting Files
The contents of this package are being extracted.
Please wait while the InstallShield Wizard extracts the files needed to install Realtek HD Audio on your computer. This may take a few moments.
Reading contents of package...
InstallShield
< Back
Next >
Cancel


Realtek High Definition Audio Driver Setup (2.85) R2.35
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel


Realtek High Definition Audio Driver Setup (2.85) R2.35
Setup Status
Realtek High Definition Audio Driver is configuring your new software installation.
InstallShield
Cancel


Realtek High Definition Audio Driver Setup (2.85) R2.35
Setup Status
Realtek High Definition Audio Driver is configuring your new software installation.
Installing
InstallShield Wizard is installing ...
InstallShield
Cancel


Realtek High Definition Audio Driver Setup (2.85) R2.35
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Realtek High Definition Audio Driver. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

Click FINISH; Audio Driver Installation Complete.

Step 4: click "**Finish**" to complete the installation process.

**** 802.11b/g Wireless adapter, there is option.**

Chapter 7 Touch Screen Installation

This chapter describes how to install drivers and other software that will allow your PenMount 6000 Controller Board to work with different operating systems.

NOTE: PenMount USB drivers support up to 15 USB controllers.

7.1 Introduction to Touch Screen Controller Board

PenMount 6300 USB control board is a touch screen control board designed for USB interface and specific for 4, 5, 8-wire touch screens. It is designed with USB interface features with multiple devices supporting function. PenMount 6300 control board using PenMount 6000 controller that has been designed for those who may like and all-in-one solution with 10-bit A/D converter built-in to make the total printed circuit board denser, circuit diagram also designed for 12-bit ADC for optional. There are two connectors on this board, one connector is for 4, 5, 8-wire touch screen cable (optional), and another is for 4-pin USB A type cable (optional).

Figure 7.1: Bird's Eye View of Control Board

7.2 Windows 2000/XP/2003/Vista Universal Driver Installation for PenMount 6000 Series

Before installing the Windows 2000/XP driver software, you must have the Windows 2000/XP system installed and running on your computer. You must also have one of the following PenMount 6000 series controller or control boards installed: PM6500, PM6300.

7.2.1 Installing Software

If you have an older version of the PenMount Windows 2000/XP driver installed in your system, please remove it first. Follow the steps below to install the PenMount DMC6000 Windows 2000/XP driver.

1. Please make sure your PenMount 6000 device had plugged in advance. If your device uses RS232 interface, please plugged in before the machine is turned on. When the system first detects the controller board, a screen appears that shows “Unknown Device”. Do not use this hardware wizard. Press Cancel.

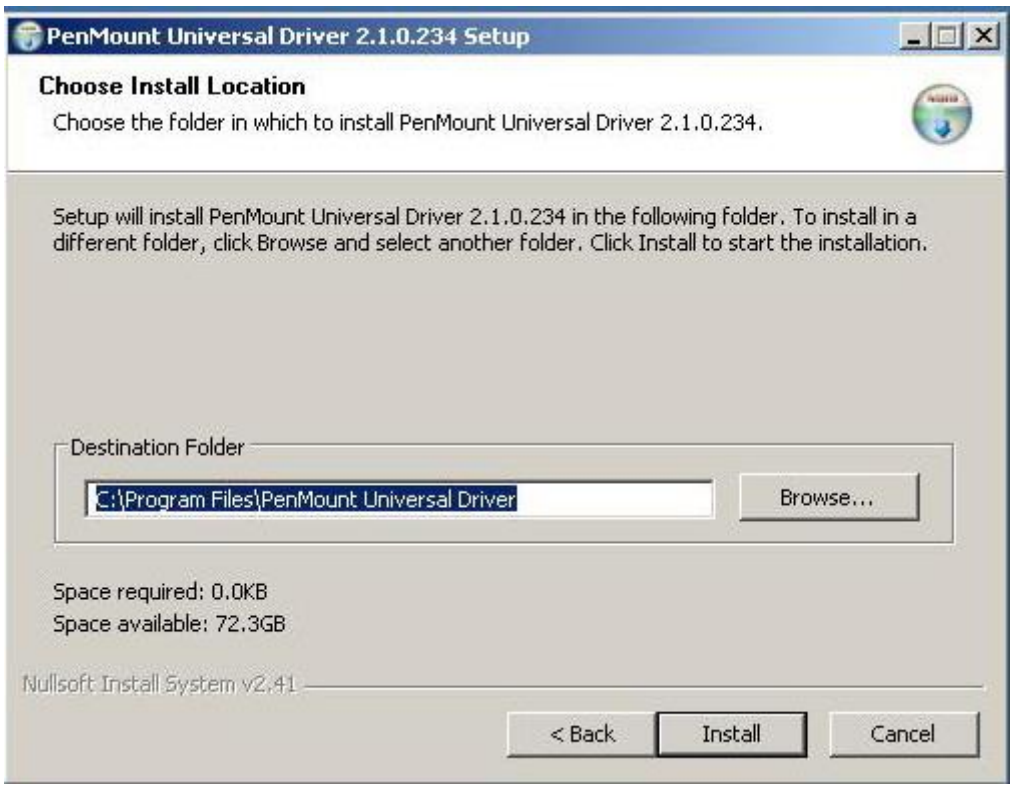
2. Insert the Aplex product CD install **setup.exe.** the screen below would appear. Click touch panel driver

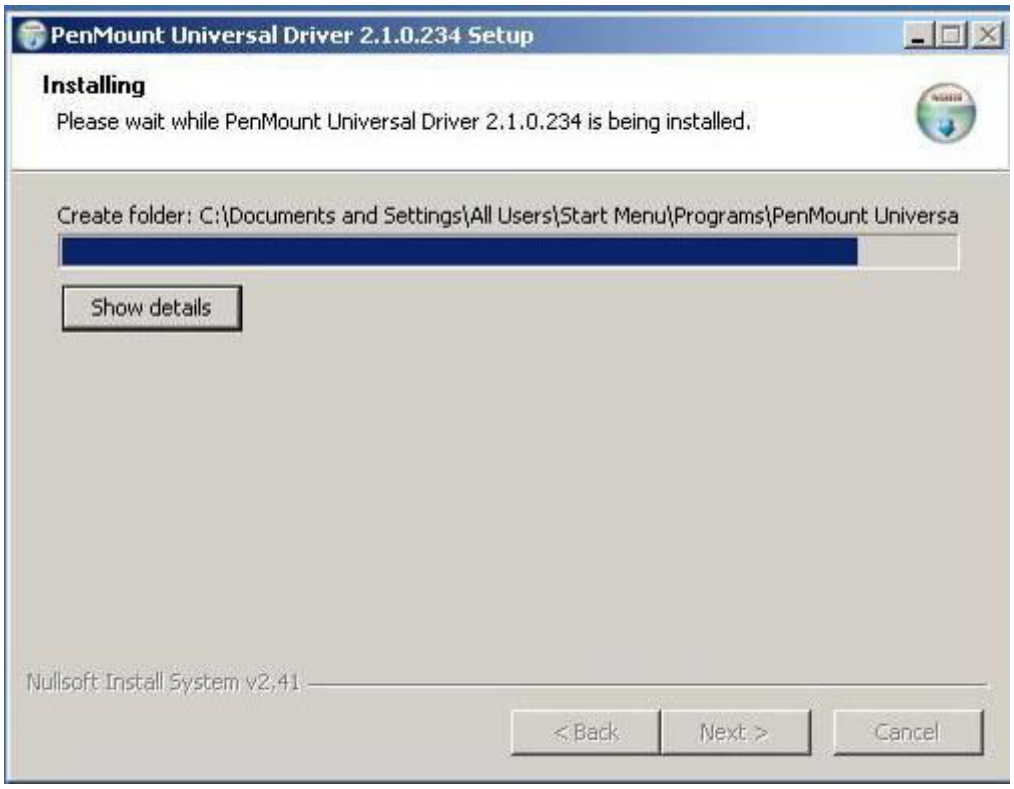
PenMount Universal Driver 2.1.0.234 Setup
Welcome to the PenMount Universal Driver 2.1.0.234 Setup Wizard
This wizard will guide you through the installation of PenMount Universal Driver 2.1.0.234.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
< Back
Next >
Cancel

3. A License Agreement appears. Click “**I accept…**” and “**Next**”

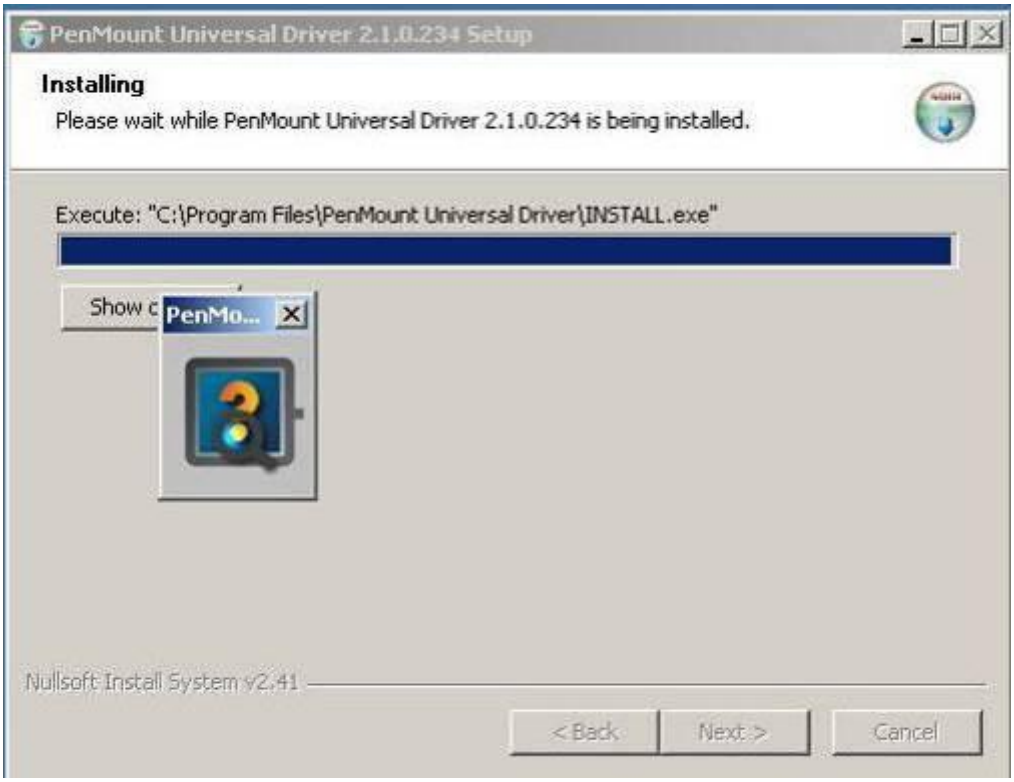
PenMount Universal Driver 2.1.0.234 Setup
License Agreement
Please review the license terms before installing PenMount Universal Driver 2.1.0.234.
Press Page Down to see the rest of the agreement.
PLEASE READ THE LICENSE AGREEMENT
PenMount touch screen driver software is only for using with PenMount touch screen controller or control board.
Any person or company using a PenMount driver on any piece of equipment which does not utilize an PenMount touch screen controller will be prosecuted to the full extent of the law.
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install PenMount Universal Driver 2.1.0.234.
Nullsoft Install System v2.41
< Back
I Agree
Cancel

4. Ready to Install the Program. Click “**Install**”


PenMount Universal Driver 2.1.0.234 Setup
Choose Install Location
Choose the folder in which to install PenMount Universal Driver 2.1.0.234.
Setup will install PenMount Universal Driver 2.1.0.234 in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder
C:\Program Files\PenMount Universal Driver
Browse...
Space required: 0.0KB
Space available: 72.3GB
Nullsoft Install System v2.41
< Back
Install
Cancel


PenMount Universal Driver 2.1.0.234 Setup
Installing
Please wait while PenMount Universal Driver 2.1.0.234 is being installed.
Create folder: C:\Documents and Settings\All Users\Start Menu\Programs\PenMount Universa
Show details
Nullsoft Install System v2.41
< Back
Next >
Cancel

5. Installing



6. The “Install Shield Wizard Completed” appears. Click “**Finish**”.

PenMount Universal Driver 2.1.0.234 Setup
Completing the PenMount Universal Driver 2.1.0.234 Setup Wizard
PenMount Universal Driver 2.1.0.234 has been installed on your computer.
Click Finish to close this wizard.
< Back
Finish
Cancel

7.2.2 Software Functions

Upon rebooting, the computer automatically finds the new 6000 controller board. The touch screen is connected but not calibrated. Follow the procedures below to carry out calibration.

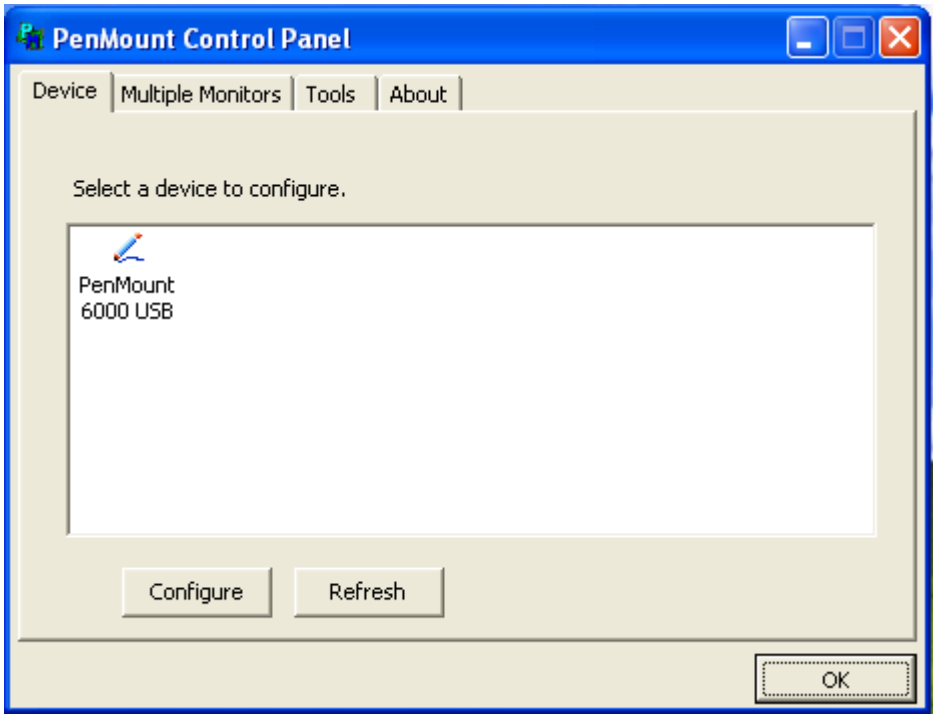
1. After installation, click the PenMount Monitor icon “PM” in the menu bar.
2. When the PenMount Control Panel appears, select a device to “Calibrate.”

PenMount Control Panel

The functions of the PenMount Control Panel are **Device, Multiple Monitors** ,**Tools** and **About**, which are explained in the following sections.

Device

In this window, you can find out that how many devices be detected on your system.



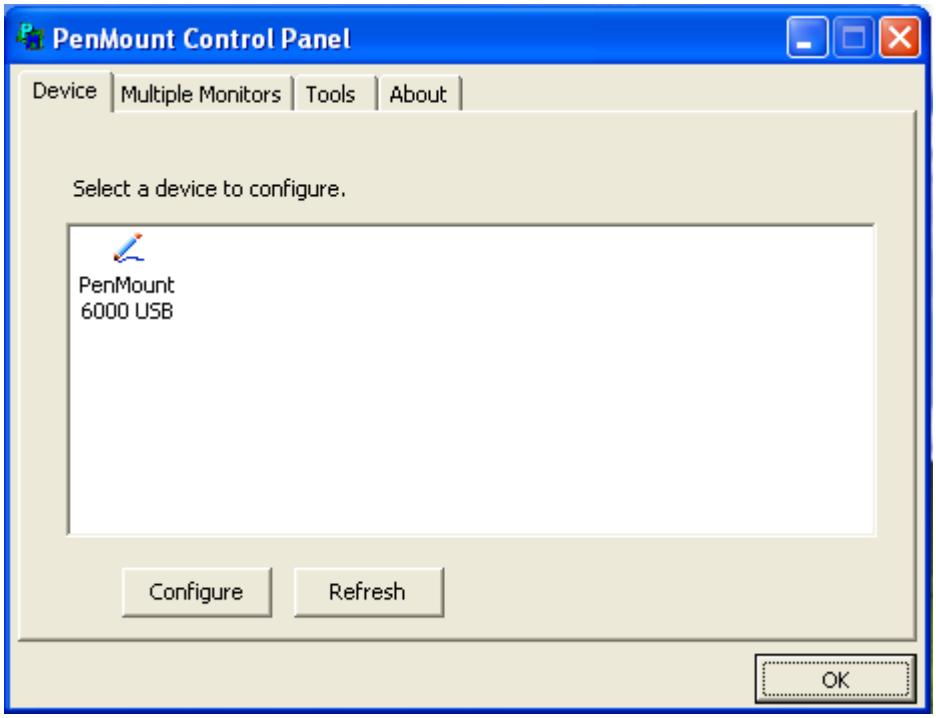
Calibrate

This function offers two ways to calibrate your touch screen. ‘Standard Calibration’ adjusts most touch screens. ‘Advanced Calibration’ adjusts aging touch screens.

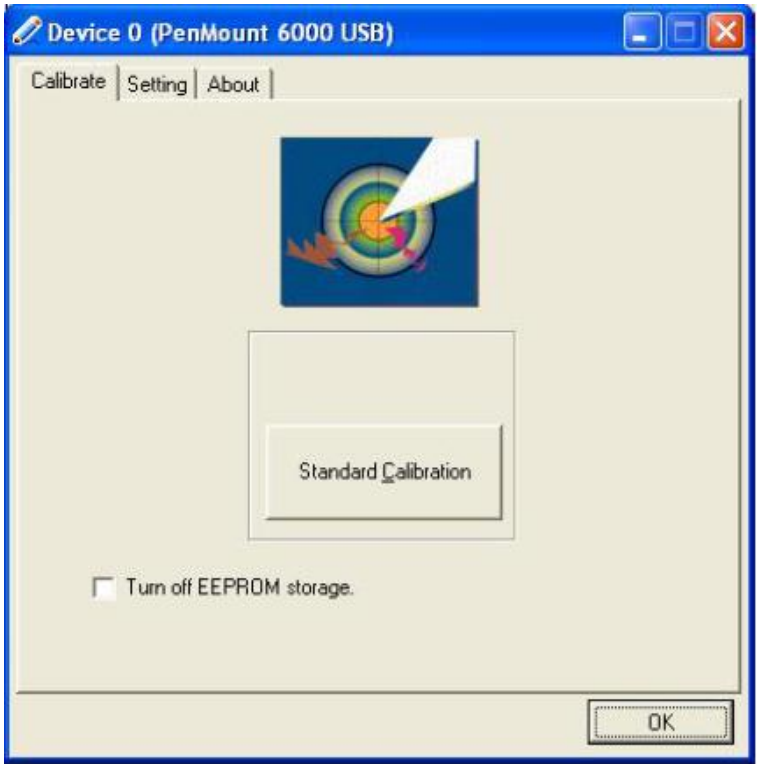
Standard Calibration	**Click this button and arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After the fifth red point calibration is complete. To skip, press ‘ESC’.**

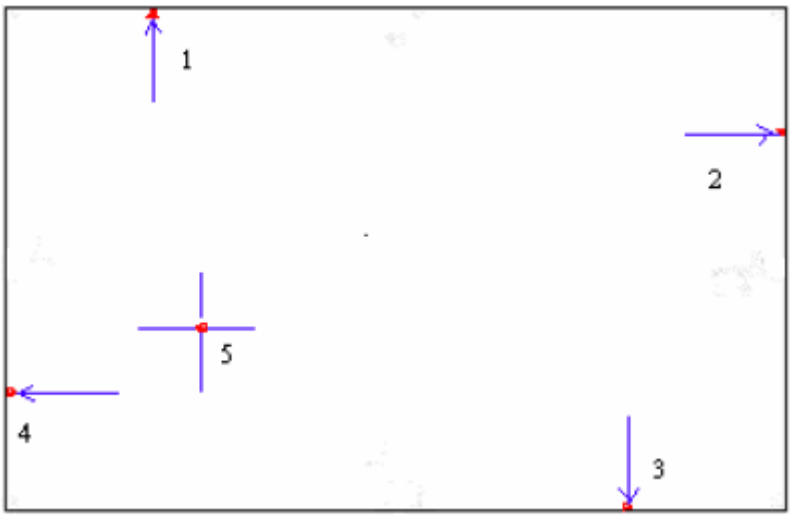
Advanced Calibration	**Advanced Calibration uses 4, 9, 16 or 25 points to effectively calibrate touch panel linearity of aged touch screens. Click this button and touch the red squares in sequence with a stylus. To skip, press ESC'.**
Command Calibration	**Command call calibration function. Use command mode call calibration function, this can uses Standard, 4, 9, 16 or 25 points to calibrate** E.g. Please run ms-dos prompt or command prompt c:\Program Files\PenMount Universa Driver\Dmcctrl.exe -calibration 0 (Standard Calibration) Dmcctrl.exe - calibration ($) 0= Standard Calibration 4=Advanced Calibration 4 9=Advanced Calibration 9 16=Advanced Calibration 16 25=Advanced Calibration 25

1. Please select a device then click "Configure". You can also double click the device too.



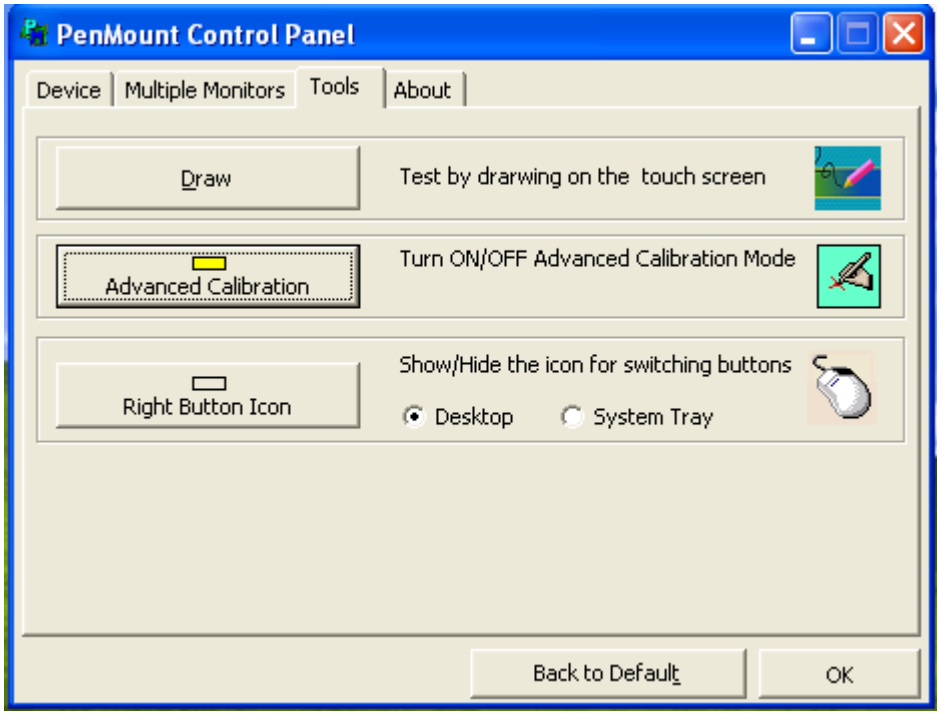
2.Click "Standard Calibration" to start calibration procedure



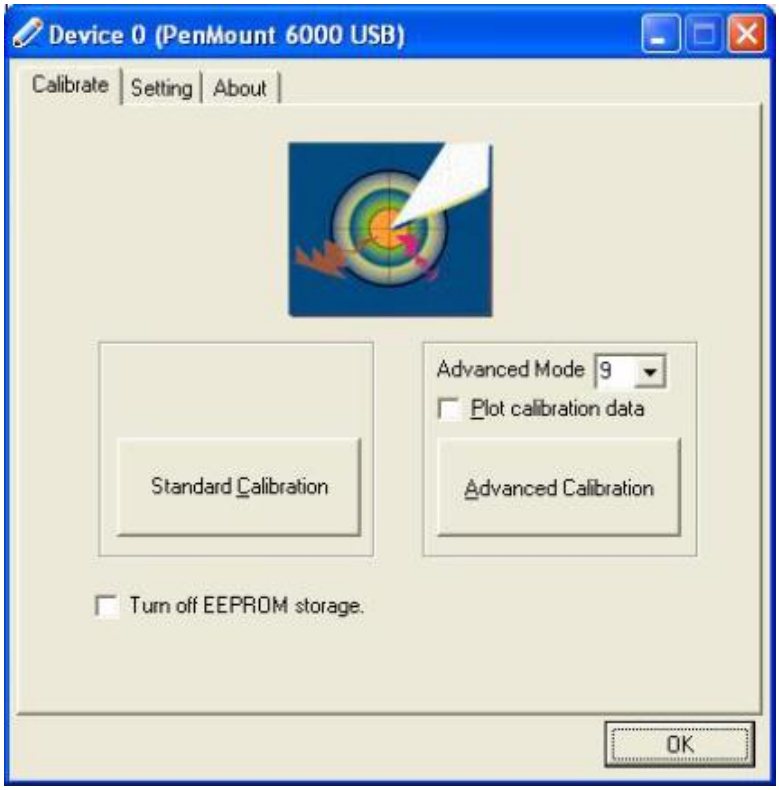


NOTE: The older the touch screen, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for greater accuracy. Please follow the step as below:

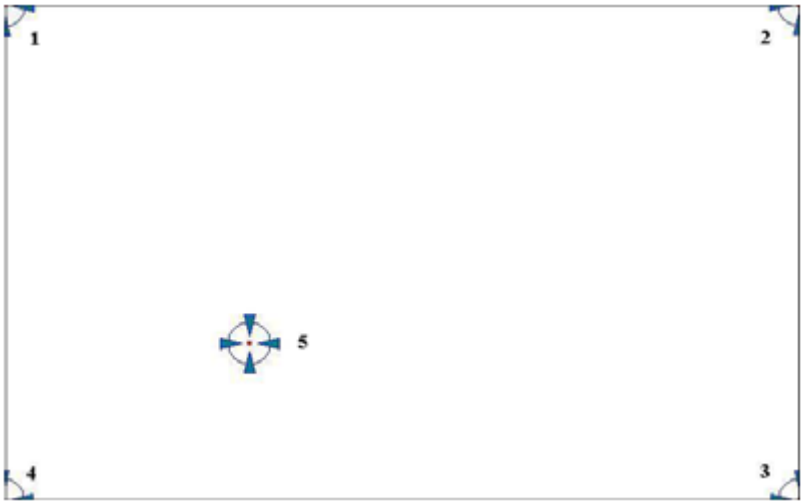
3.Come back to “PenMount Control Panel” and select “**Tools**” then Click “**Advanced Calibration**”.



Select “**Device**” to calibrate, then you can start to do “Advanced Calibration”.



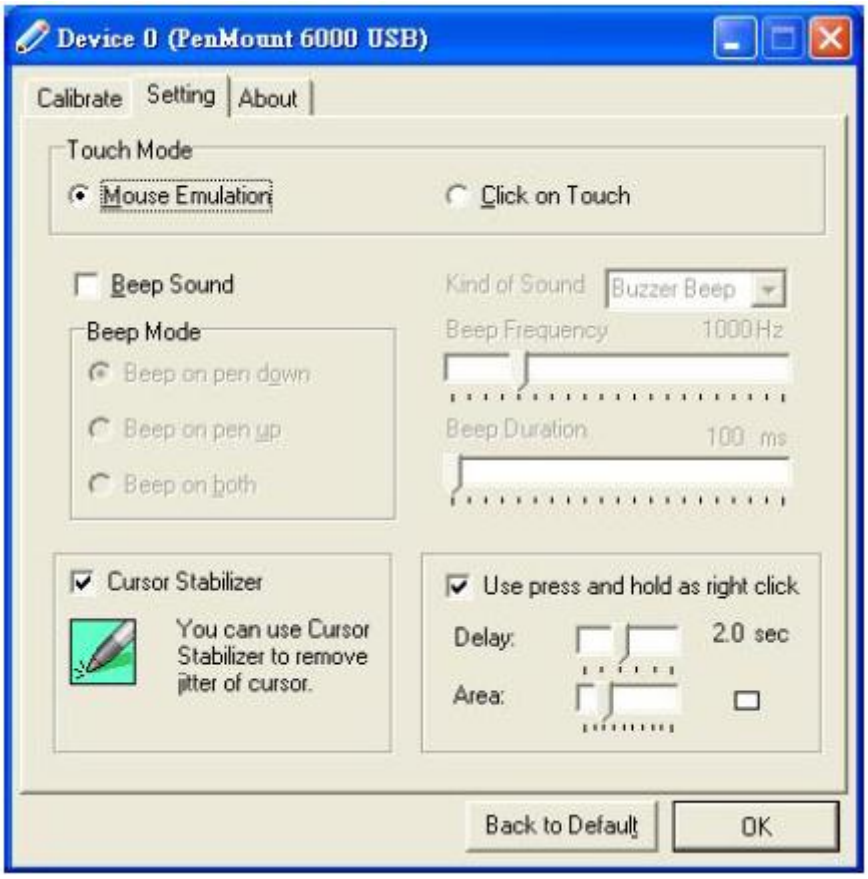
NOTE: Recommend to use a stylus during Advanced Calibration for greater accuracy.



Plot Calibration Data	**Check this function and a touch panel linearity comparison graph appears when you have finished Advanced Calibration. The blue lines show linearity before calibration and black lines show linearity after calibration.**
Turn off EEPROM storage	**The function disable for calibration data to write in Controller. The default setting is Enable**

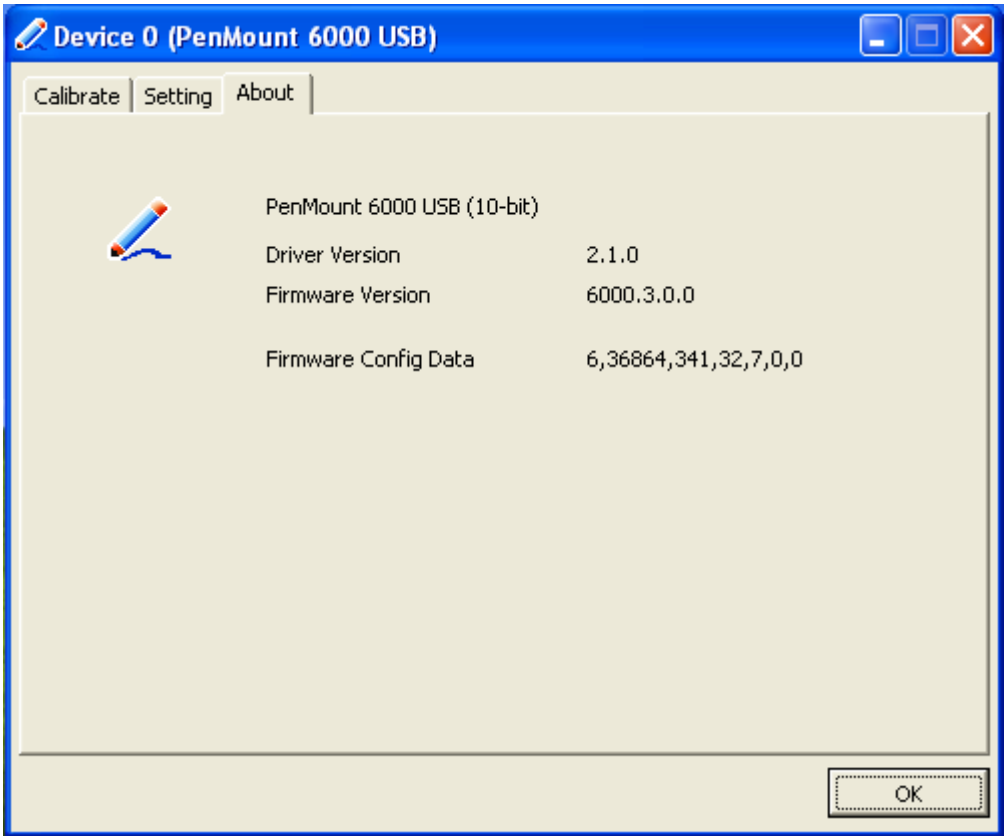
Setting

Touch Mode	**This mode enables and disables the mouse's ability to drag on-screen icons—useful for configuring POS terminals.** **Mouse Emulation – Select this mode and the mouse functions as normal and allows dragging of icons.** **Click on Touch – Select this mode and the mouse only provides a click function, and dragging is disabled**
Beep Sound	**Enable Beep Sound – turns beep function on and off** **Beep on Pen Down – beep occurs when pen comes down** **Beep on Pen Up – beep occurs when pen is lifted up** **Beep on both – beep occurs when comes down and lifted up** **Beep Frequency – modifies sound frequency** **Beep Duration – modifies sound duration**
Cursor Stabilizer	**Enable the function support to prevent cursor shake.**
Use press and hold as right click	**You can set the time out and area for you need**



About

This panel displays information about the PenMount controller and driver version.



Multiple Monitors

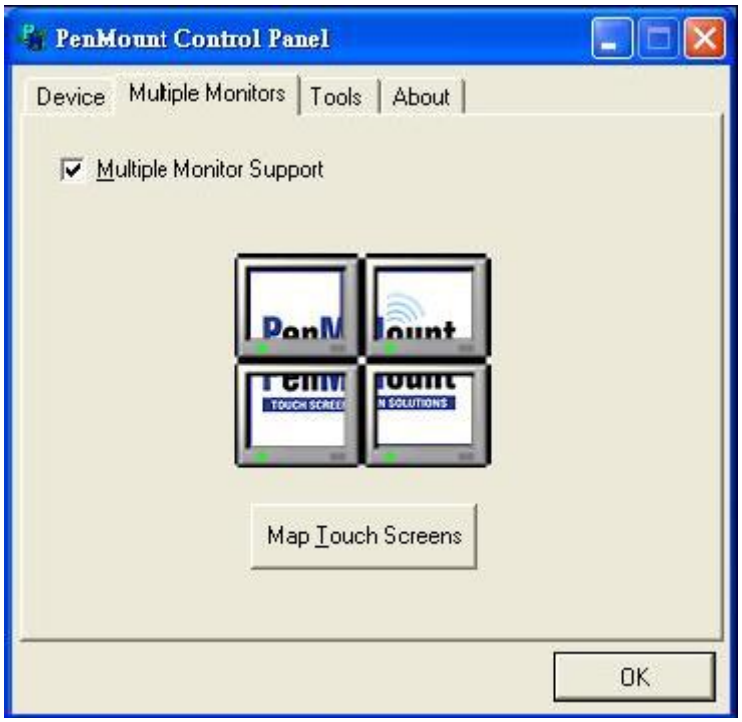
Multiple Monitors supports from two to six touch screen displays for one system. The PenMount drivers for Windows 2000/XP support Multiple Monitors. This function supports from two to six touch screen displays for one system. Each monitor requires its own PenMount touch screen control board, either installed inside the display or in a central unit. The PenMount control boards must be connected to the computer COM ports via the RS-232 interface. Driver installation procedures are the same as for a single monitor. Multiple Monitors supports the following modes:

Windows Extend Monitor Function
Matrox DualHead Multi-Screen Function
nVidia nView Function

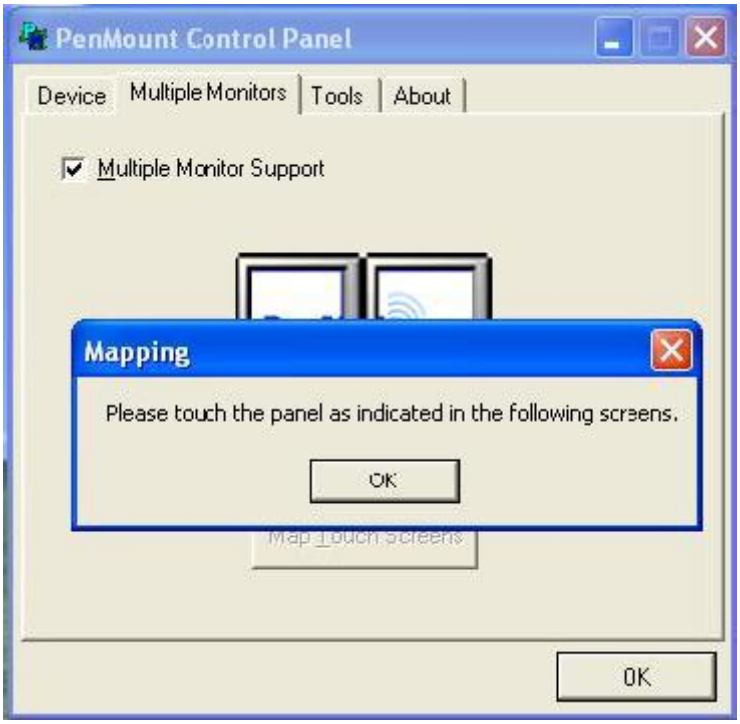
NOTE: The Multiple Monitors function is for use with multiple displays only. Do not use this function if you have only one touch screen display. Please note once you turn on this function the Rotating function is disabled.

Enable the multiple display function as follows:

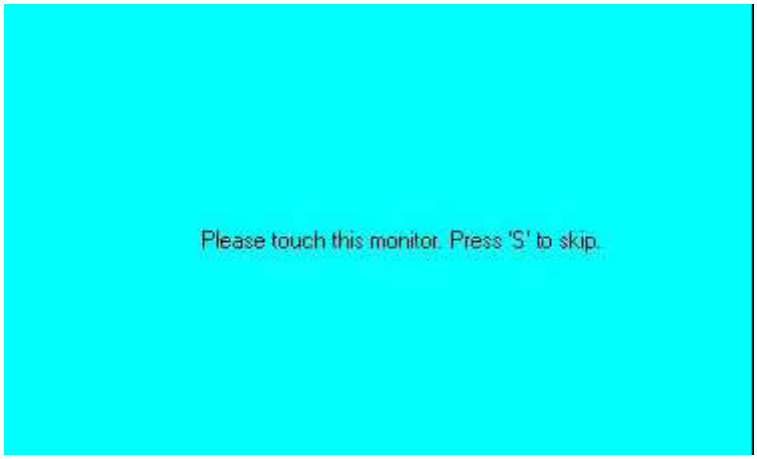
1. Check the "**Multiple Monitor Support"** box; then click "**Map Touch Screens"** to assign touch controllers to displays.



2. When the mapping screen message appears, click "**OK"**



3. Touch each screen as it displays **“Please touch this monitor. Press ‘S’ to skip”** Following this sequence and touching each screen is called **mapping the touch screens**.



4. After the setting procedure is finished, maybe you need to calibrate for each panel and controller

NOTES:

1. If you used a single VGA output for multiple monitors, please do not use the **Multiple Monitors** function. Just follow the regular procedure for calibration on each of your desktop monitors.

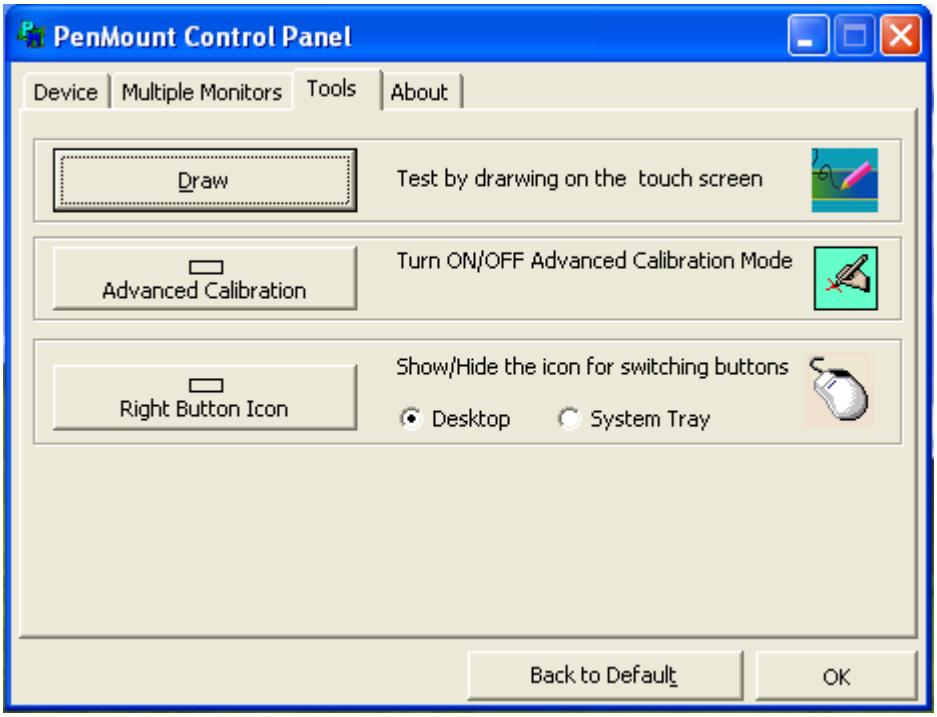
2. The Rotating function is disabled if you use the Multiple Monitors function.

3. If you change the resolution of display or screen address, you have to redo **Map Touch Screens** so the system understands where the displays are.

4. If you more monitor mapping one touch screen, **Please press ‘S’ to skip mapping step.**

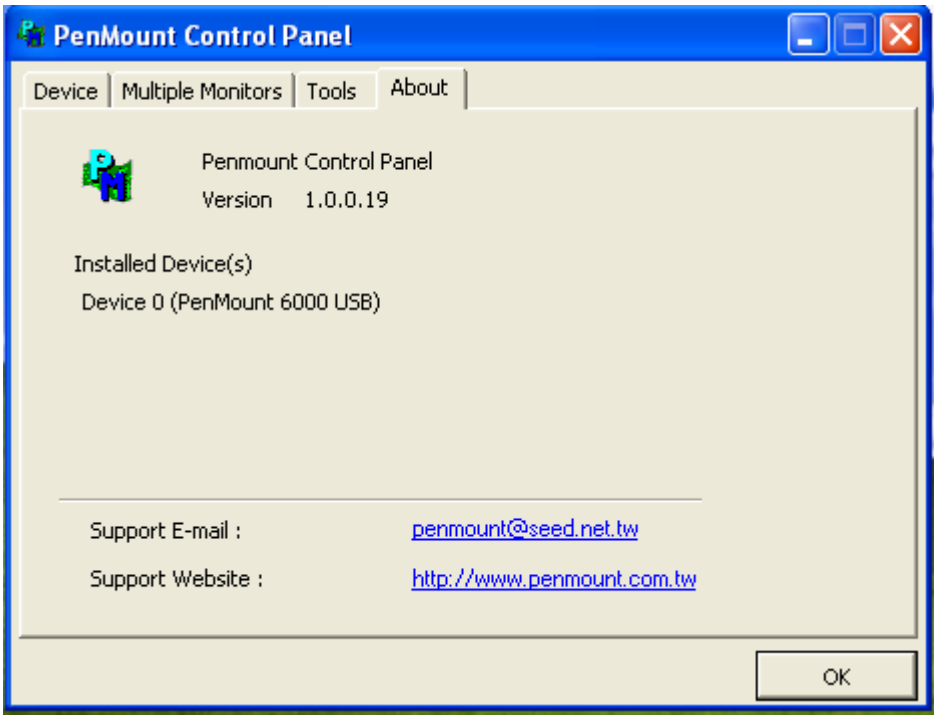
Tools

Draw	**Tests or demonstrates the PenMount touch screen operation.**
Advanced Calibration	**Enable Advanced Calibration function**
Right Button Icon	**Enable right button function. The icon can show on Desktop or System Tray (menu bar).**



About

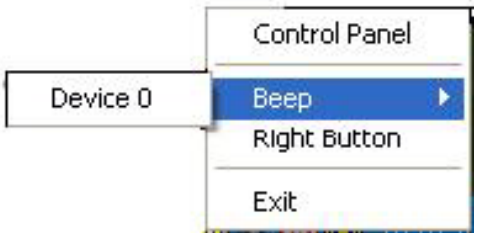
You can see how many devices of PenMount controller that are plugged to your system



PenMount Monitor Menu Icon

The PenMount monitor icon (PM) appears in the menu bar of Windows 2000/XP system when you turn on PenMount Monitor in PenMount Utilities.

PenMount Monitor has the following function



Control Panel	**Open Control Panel Windows**
Beep	**Setting Beep function for each device**
Right Button	**When you select this function, a mouse icon appears in the right-bottom of the screen. Click this icon to switch between Right and Left Button functions.**
Exit	**Exits the PenMount Monitor function.**

PenMount Rotating Functions

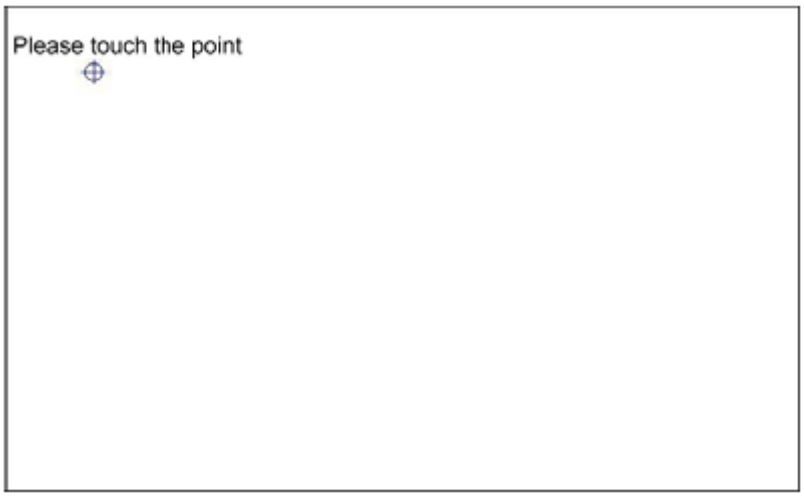
The PenMount driver for Windows 2000/XP supports several display rotating software packages.

Windows Me/2000/XP support display rotating software packages such as:

- Portrait's Pivot Screen Rotation Software
- ATI Display Driver Rotate Function
- nVidia Display Driver Rotate Function
- SMI Display Driver Rotate Function
- Intel 845G/GE Display Driver Rotate Function

Configuring the Rotate Function

1. Install the rotation software package.
2. Choose the rotate function (0°, 90°, 180°, 270°) in the 3rd party software. The calibration screen appears automatically. Touch this point and rotation is mapped.



NOTE: The Rotate function is disabled if you use Monitor Mapping